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ERRATA

V.B. **22**, 450. Lines 6 and 7 of abst; for 'deceases', please read 'decreases'.
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DISEASES CAUSED BY BACTERIA AND FUNGI

GEZON, H. M. & FASAN, D. M. (1951). **Cross resistance of streptococci to five *Streptomyces* antibiotics.**—*Science*. **114**, 422-423. 1941

Cross resistance was acquired *in vitro* by seven β-haemolytic streptococci of Group A to aureomycin, terramycin and chloromycetin. A similar effect may occur between neomycin and streptomycin.—JOHN SEAMER.

PATTISON, I. H. (1952). **Studies on experimental streptococcal mastitis. VI. Histological examination of the teats of affected goats.**—*J. comp. Path.* **62**, 1-5. [Authors' summary copied *verbatim*.] 1942

A histological examination was made of the teats of 29 goats inoculated into one side of the udder through the teat canal with heat-killed or living *Str. agalactiae*, and killed at times varying from six hours to 82 days after inoculation.

No abnormality was found in animals inoculated with heat-killed streptococci, nor in two animals, killed 45 and 54 days after inoculation, that gave a minimal reaction to inoculation of living streptococci.

In animals that gave an intermediate or marked reaction to the inoculation of living streptococci, there was a cellular reaction in the tissue immediately beneath the epithelium lining the teat and progressive stratification of the epithelium itself. Cornification of the lining epithelium was commonly found at the height of the disease. In the later stages of the disease the surface layers of stratified epithelium were shed until a lining epithelium about two cells thick, and similar to the normal lining epithelium, remained.

FRAYER, J. M. (1948). **A study of certain methods used in the laboratory diagnosis of bovine mastitis.**—*Bull. Vt agric. Exp. Sta.* No. 547. pp 2-19. 1943

F. discussed large-scale routine mastitis diagnosis and analysed the relative merits of sampling—*viz.* composite herd, composite udder or individual quarter; he gave details of microscopic examination of stained smears from incubated and unincubated samples for cells and organisms, and compared these with the results from Hotis tests using brom-cresol purple with or without preservative.—J. SCARNELL.

DODD, F. H. & NEAVE, F. K. (1951). **Machine milking rate and mastitis.**—*J. Dairy Res.* **18**, 240-245. 1944

The authors demonstrated that the incidence of mastitis in machine milked first-lactating animals increased with the rate of milking. —CLIVE BRIGGS.

PRIER, J. E. (1951). **The *in vitro* effect of several antibiotics against *Vibrio fetus*.**—*Vet. Med.* **46**, 358-359. [Abst. from author's summary.] 1945

In preliminary studies on the *in vitro* sensitivity of four strains of *Vibrio fetus* to aureomycin, penicillin, streptomycin, neomycin, bacitracin, chloromycetin, and terramycin, using both tube dilution and plate dilution methods, terramycin, neomycin, and chloromycetin were more active against the organisms than were the others.

BOQUIEN, M. (1950). Sur une épidémie de charbon animale et humaine observée dans le Morbihan. **[An epidemic of anthrax in animals and man in the Department of Morbihan.]**—*Bull. Acad. Méd., Paris.* **134**, 585-589. 1946

During the dry summer of 1949 an outbreak of anthrax occurred in cattle in a marshy area where the disease had been known for years to be endemic. Failure to diagnose the first cases resulted in the slaughter of affected animals for human consumption and 15 persons

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

developed anthrax. All the human cases arose by skin infection: the incubation period was 2–5 days.—E. G. WHITE.

CLARKE, P. S. (1952). **Chloramphenicol in treatment of cutaneous anthrax.**—*Brit. med. J.* Jan. 12th, 86-87. [Author's summary copied *verbatim.*] **1947**

Cutaneous anthrax in four patients aged from 10 months to 55 years was treated with chloramphenicol with an initial dose of 60 mg. per kg. of body weight and a maintenance dose of 30 mg./kg. eight-hourly for 60 hours, then 15 mg./kg. eight-hourly for 48 hours, and finally 7·5 mg./kg. eight-hourly for a further 48 hours. All four cases showed rapid improvement leading to cure.

One case was treated on the usual lines with penicillin, sulphadiazine, and arsenic as a control. The series is too small to demonstrate the superiority of either method, each appearing equally effective.

BALDRIDGE, G. D. & KLIGMAN, A. M. (1951). **The nature of the tuberculin reaction: failure to demonstrate *in vitro* cytotoxicity of tuberculin for the cells of sensitized animals.**—*Amer. Rev. Tuberc.* **63,** 674-678. **1948**

Addition of O.T. and P.P.D. in high concentrations to tissue cultures from explants from g. pigs hypersensitized to tuberculin by live bacillus infection did not inhibit growth.

—F. R. HARRIS.

KUBIN, G. (1951). Untersuchungen über Tuberkulinproben mit abgestuften Verdünnungen zur Bestimmung der aktuellen Reaktionslage des Organismus. **[Experiments in cattle with graded dilutions of tuberculin for the determination of the actual reaction.]**—*Wien. tierärztl. Mschr.* **38,** 277-310. [English, French and Italian summaries.] **1949**

The single intradermal test was carried out on 1,000 cattle coming to abattoirs and 153 bovine hospital cases. Dilutions of 1:10 and 1:1,000 Old Tuberculin were injected simultaneously in doses of 0·1 ml. at two sites in the neck. Readings were taken at 48 hours. A careful search for macroscopic tuberculous lesions was made at slaughter and the severity and distribution of the disease was considered in relation to the relative degrees of the reaction to the two dilutions of tuberculin. Reactions with the 1:10 dilution which were more than three times those with the 1:1,000 dilution were termed "pleoergic" and were considered to indicate that resistance exceeded susceptibility; the term "pleoaesthesia" was used when the difference was less than this and was said to indicate low resistance and high susceptibility. The observations were made to see whether a correlation existed in cattle similar to that which was found by von Groer in studies of human TB. using a similar method of assessment.

In general it was found that animals with localized or inactive lesion gave a pleoergic reaction whereas animals with progressive TB., recent infection or infiltrating or "breakdown" TB. gave the pleoaesthetic form of reaction. Of the 1,000 cattle coming to abattoirs 218 showed evidence of TB. and about half the hospital patients were infected. There were a number of discrepancies between the test and the P.M. findings, some being attributed to early infections and some to a condition of anergy in severely infected and "open" cases (11 animals).

—E. G. WHITE.

SOHIER, R., SIMINTZIS, G. & JUILLARD, J. (1950). La réaction d'hémagglutination type Middlebrook-Dubos dans le diagnostic de la tuberculose bovine. **[The haemagglutination test in bovine tuberculosis.]**—*Bull. Acad. vét. Fr.* **23,** 393-397. **1950**

An account of tests on the sera of 118 cattle. The reaction was positive in 4·6% of apparently healthy animals, in 50% of those with lymph node lesions only in the lungs, in 87·3% of those with generalized lesions or lesions in several organs and in all of those with lesions in the pleura and lungs. [See also next abst.—Ed. *V.B.*]—G. V. LAUGIER.

SIMINTZIS, G., SOHIER, R. & PERES, G. (1951). La réaction d'hémagglutination type Middlebrook-Dubos dans le diagnostic de la tuberculose bovine (2e note). **[The haemagglutination test in diagnosis of bovine TB.]**—*Bull. Acad. vét. Fr.* **24,** 387-392. **1951**

Serum samples from cattle negative to the tuberculin test and negative at P.M. examination yielded titres up to 1:32 to the haemagglutination test. In tuberculous animals there were titres up to 1:512. However, even in this infected group titres of 1:32 and below were common.—D. LUKE.

GRÄUB, E., SAXER, E. & VONARBURG, H. (1949). Über das Verhalten der Tuberkelbazillen bei experimenteller Reinfection des Rindes. **[Behaviour of tubercle bacilli in experimental reinfection of cattle.]**—*Schweiz. Z. Path. Bakt.* **12,** 459-467. **1952**

Experiments are described to show the existence in cattle of infection immunity to TB. Comparable with Koch's phenomenon in the g. pig, rapid healing occurs in cattle after spontaneous bursting of a superficial lesion or after partial or total excision of the necrotic tissue of the virulent re-infection site. Also,

the authors state, the lesion resulting from a re-infecting dose is localized to the site of infection without clinical involvement of the lymph nodes.—W. R. Bett.

Šterk, V. & Rahelić, S. (1950). Prilog poznavanju tuberkuloze peradi i njenom suzbijanju domaćim tuberkulinom. [**The use of tuberculin for the control of TB. in fowls.**]—*Vet. Glasnik.* **4,** 337-348. **1953**

Details were given of tests on 800 fowls on a poultry farm.

Debrot, S. (1951). Les anticorps de la tuberculose. Valeur des hypothèses de Sahli. [**The antibodies in TB.**]—*Rev. Path. comp.* **51,** 510-522. **1954**

Sahli distinguished two antibodies in TB., one primary lytic, the other antitoxic. D. gave examples and diagrams to explain the part played by these antibodies. He made various criticisms of Sahli's hypothesis.—W. R. Bett.

Kirchheimer, W. F., Hess, A. R. & Spears, R. G. (1951). **Attempts at passive transfer of tuberculin type of sensitivity with living granulocytes.**—*Amer. Rev. Tuberc.* **64,** 516-519. [French and Spanish summaries. Authors' summary copied *verbatim.*] **1955**

Attempts were made at homologous passive transfer of tuberculin-type sensitivity with living granulocytes of tuberculin-sensitive guinea pigs. The results of the experiments show that it was not possible to elicit either cutaneous or systemic tuberculin reactions in the animals which received granulocytes from tuberculin-sensitive guinea pigs.

Bretey, J. (1951). **New methods of purifying tuberculin.**—*Proc. roy. Soc. Med.* **44,** 1053-1054. [French summary.] **1956**

The method is described in detail, starting with 8-week cultures on Sauton's medium, which are sterilized by heating for 1 hour at 110°C., and filtered. A salicylic acid precipitate, containing the active principles, is isolated and further treated. This technique gives a uniform product, and the rapidity with which it can be carried out makes it possible to work in strictly aseptic conditions. B. discussed the method he had used for the fractionation of tuberculin.—W. R. Bett.

Seibert, F. B., Crumb, C. & Dufour, E. H. (1951). **Antigenic differences in two tuberculin protein fractions.**—*J. infect. Dis.* **89,** 252-258. [Authors' summary copied *verbatim.*] **1957**

Studies have been made in regard to skin reactions and antibody production to two tuberculin protein antigens (A and C) which have widely different chemical properties.

The A antigen made from several strains of human tubercle bacilli, as well as from bovine strains, including BCG, gave larger skin reactions in infected guinea pigs per mg. of nitrogen than did standard PPD-S, while the C antigens from similar strains gave smaller reactions.

In general, smaller reactions occurred to all products, except perhaps proteins from the BCG strain, in BCG vaccinated animals than in those infected with a virulent strain of tubercle bacillus (DT). On the other hand, reactions to the fractions were usually larger in comparison with those to PPD-S in the BCG vaccinated animals.

In human beings the A and C fractions were weaker in the more sensitive individuals, relative to PPD-S, but both, and especially the A, were stronger in the less sensitive individuals, indicating that the latter were reacting in a manner similar to BCG infected guinea pigs.

The C fraction appears to be the stronger antigen by complement fixation, but the antigenic specificity of the A and C fractions can be better recognized by means of precipitin reactions. Both tests indicate that the two types of fractions are different antigenically.

Heckly, R. J. & Watson, D. W. (1951). **Extraction and fractionation of water-soluble components from tubercle bacilli.**—*Amer. Rev. Tuberc.* **64,** 602-619. [French and Spanish summaries. English summary copied *verbatim.*] **1958**

It was found that, when mechanically ruptured tubercle bacilli were extracted with a 0·1 M borate buffer at pH 8·4, more material was rendered water soluble than when the cell debris was extracted with a phosphate buffer containing ether. Both procedures yielded extracts containing essentially the same substances but in different proportions. Borate buffer extracted less carbohydrate and nucleic acid but more protein than did the ether-phosphate buffer. The average tuberculin activity of the crude extracts was comparable to that of purified protein derivative (PPD).

There was evidence that the average potency of the proteins in the ether-phosphate buffer extracts was greater than that of the proteins in the borate buffer extracts. However, the temperature had to be maintained below 0·5°C. during the extraction to prevent denaturation of the proteins by ether.

The electrophoretic mobilities of the various

components in borate buffer extracts were nearly identical with the mobilities of corresponding components in ether-phosphate buffer extracts. Also the general appearance of the electrophoretic patterns of a crude borate buffer extract of tubercle bacilli was the same at pH 8·6, 7·7, and 6·1.

It was found that the crude extact of a young culture had more tuberculin activity than a comparable extract of an older culture of tubercle bacilli.

Problems involved in the removal of nucleic acid from extracts of tubercle bacilli have been considered. Extracts have been obtained free of nucleic acid by adsorption with calcium phosphate, but some protein also was removed from the extracts by the procedure. The nucleic acid obtained from the crude extracts by calcium phosphate adsorption is highly polymerized.

Fractionation procedures employing ethanol were applied to the extracts after the nucleic acid was removed by calcium phosphate adsorption. One fraction, precipitated by 15 per cent ethanol at pH 5·3, contained 84 per cent protein and was approximately three times as active as PPD-S. Another protein fraction was obtained which had properties similar to protein C, isolated by Seibert from unheated culture filtrates. Two polysaccharides which corresponded to the polysaccharides designated I and II by Seibert also were obtained in a relatively pure form by ethanol fractionation.

Only a single protein component was evident by electrophoresis, but the correlation of activity and protein content of various fractions indicated the presence of two or more proteins in the extracts of tubercle bacilli. These proteins differed primarily in their tuberculin activity.

ILAND, C. N. (1951). **The serology of polysaccharides from the tubercle bacillus.**—*J. Path. Bact.* **63,** 735-741. [Author's summary copied *verbatim.*] **1959**

A study of the literature reveals that although polysaccharides from the tubercle bacillus readily give precipitin reactions with sera from immunised animals, there is no consistent evidence that they react with human tuberculous sera. All of 7 polysaccharides examined in the present work appeared to react with the same antibody in animal antisera. None of the polysaccharides reacted with sera from patients with tuberculosis, although a number of different methods were tried.

ASSELINEAU, J. (1951). Sur la variation de la teneur en lipides du bacille tuberculeux, en fonction de l'âge de la culture. **[Variation in the lipoid content of *Mycobacterium tuberculosis* with the age of the culture.]**—*Ann. Inst. Pasteur.* **81,** 306-310. **1960**

The total free lipoid content of 4–5 day cultures of *Mycobacterium tuberculosis* (a human type strain and B.C.G.) is 7–10% of the dry weight, compared with 20–22% in cultures 4–6 weeks old. The phosphatide fraction is the same in young as in old bacilli, but the 'wax' content is much less in the former. The bearing of these findings on virulence and acid-resistance is discussed.—W. R. BETT.

YOUMANS, G. P. & YOUMANS, A. S. (1951). **The relation between the size of the infecting dose of tubercle bacilli and the survival time of mice.**—*Amer. Rev. Tuberc.* **64,** 534-540. [French and Spanish summaries. Authors' summary copied *verbatim.*] **1961**

Data are presented which indicate that, when mice are injected intravenously with large doses of living virulent human-type tubercle bacilli (H37Rv), a relationship approximating linearity is obtained when the logarithms of the infecting doses are plotted against their respective median survival times.

The implications of these findings are discussed and the possibility is suggested that the analysis of such data may furnish information relative to the rate of multiplication of tubercle bacilli in mice and the state of resistance or immunity of mice to tuberculous infection.

YOUMANS, G. P. & YOUMANS, A. S. (1951). **The assessment of antituberculous chemotherapeutic activity in mice, using virulent human-type tubercle bacilli.**—*Amer. Rev. Tuberc.* **64,** 541-550. [French and Spanish summaries. English summary copied *verbatim.*] **1962**

A standardized test for antituberculous chemotherapeutic activity in mice is described which employs the virulent human-type tubercle bacillus strain H37Rv. When 1·0 mg. wet weight of this strain is administered intravenously into mice, the mortality is 100% and the times of death appear to follow a normal frequency distribution curve. This permits the calculation of the median survival time which, under the conditions of the test, is approximately fourteen days. The chemotherapeutic agents, streptomycin, para-aminosalicylic acid, and viomycin [an antibiotic obtained from *Streptomyces puniceus*] prolong the survival of mice infected in this manner to a degree which is proportional to the dose administered. The method appears to be considerably more sensitive than similar methods which employ viru-

lent bovine-type tubercle bacilli as the infecting micro-organisms.

HOBBY, G., REGNA, P. & LENERT, T. (1949). **The chemotherapeutic action of streptomycin para-aminosalicylate in experimental tuberculosis in mice.** [Correspondence.]—*Amer. Rev. Tuberc.* **60**, 808-810. **1963**

Streptomycin *p*-aminosalicylate was a more effective agent against TB. in mice than streptomycin sulphate; no resistant strains developed; toxicity was that of streptomycin.

—JOHN SEAMER.

LURIE, M. B., ABRAMSON, S. & HEPPLESTON, A. G. (1952). **On the response of genetically resistant and susceptible rabbits to the quantitative inhalation of human type tubercle bacilli and the nature of resistance to tuberculosis.**—*J. exp. Med.* **95**, 119-134. [Authors' summary and conclusions slightly modified.] **1964**

If genetically resistant and susceptible rabbits inhale a certain number of human type tubercle bacilli, no TB. in the lungs of the resistant animals is seen, as a rule several months after infection, while there is a variable and often extensive disease in the susceptible rabbits. The analogy to the presence or absence of active TB. in man infected with the tubercle bacillus is evident. The inhaled tubercle bacilli multiply for but a short time in the resistant rabbits and are usually rapidly and completely destroyed. In the susceptible rabbits, the bacilli multiply profusely for a much longer time and persist in large numbers even months after inhalation.

Whatever be the cause of the more rapid destruction of tubercle bacilli in the resistant animal, the resulting more rapid release of the contained antigens enhances the development of allergic sensitivity and antibodies in these animals. The development of an acquired resistance against tubercle bacilli of the human type is sufficiently rapid to affect the genesis of the initial gross primary pulmonary foci that result from the inhalation of a given number of bacilli. The greater the genetic resistance, the fewer the initial primary foci. Variations in genetic resistance are essentially variations in the rate of development of acquired resistance.

It is suggested that variations in genetic resistance to inhaled human type tubercle bacilli may affect the prevalence of alveolar phagocytes capable of acquiring adequate resistance to the growth of the bacilli in their cytoplasm. The prevalence of such cells is subject to hormonal and immunological influences.

MYRVIK, Q. & WEISER, R. S. (1951). **A tuberculostatic serum substance possessing lysozyme-like properties.** — *Amer. Rev. Tuberc.* **64**, 669-674. [French and Spanish summaries. English summary copied *verbatim.*] **1965**

Strong tuberculostatic activity is present in the serum of rabbits immunized with heat-killed tubercle bacilli in Freund's adjuvants. The active principle in rabbit serum appears to act independently of antibodies and complement. It is similar to egg-white lysozyme in its heat stability, adsorption behaviour, inhibition by salts, dialyzability, and antibacterial spectrum. The BCG strain of *M. tuberculosis* is more susceptible to egg-white lysozyme and the tuberculostatic serum substance than the H37 strains of *M. tuberculosis*. In contrast, *M. tuberculosis avium* and *M. smegmatis* are apparently completely resistant to these substances.

BJÖRNESJÖ, K. B. (1951). **On the effect of human urine on tubercle bacilli. I.**—*Acta tuberc. scand.* **25**, 425-441. [In English. Abst. from author's summary.] **1966**

BJÖRNESJÖ, K. B. (1951). **On the effect of human urine on tubercle bacilli. II. The tuberculostatic effect of various urine constituents.**—*Ibid.* 447-456. [In English. Abst. from author's summary.] **1967**

BJÖRNESJÖ, K. B. (1951). **On the effect of human urine on tubercle bacilli. III. The solubility of the tuberculostatic factor in organic solvents and its behaviour in dialysis and electrodialysis.**—*Ibid.* 457-462. [In English. Abst. from author's summary.] **1968**

I. The bacteriostatic effect on tubercle bacilli from a human case of kidney TB., of urine from tuberculin negative and tuberculin positive healthy individuals, from healthy vegetarians and from patients with active TB. was tested.

Most of the samples had a strong inhibitory effect on the growth of tubercle bacilli, but there were slight variations in the action of the urine of different individuals and with the same individual at different times. The action was unrelated to pH.

II. Uric acid, creatinine, and the amino acids, even in the highest concentrations tested, had no inhibitory effect. Urea, hippuric acid, mineral salts, phenol, *p*-cresol and indole derivatives had a tuberculostatic effect in concentrations which were considerably higher than those occurring in normal urine.

III. The factor in urine responsible for inhibition of the growth of tubercle bacilli is not

volatile, and is resistant to the action of acid, alkaline, and neutral solutions at 100°C. It is soluble in water and in absolute alcohol, but not in acetone, ether, petroleum ether, benzene, carbon tetrachloride, or chloroform; it dialyses easily through cellophane.

ANON. (1951). **The conference on European B.C.G. programmes conducted with the assistance of the Joint Enterprise, Copenhagen, Denmark, Sept. 8th-12th 1949.**—pp. 333. Issued by the International Tuberculosis Campaign. London: W. Heinemann Medical Books Ltd. 7s. 6d. **1969**

The Joint Enterprise, a co-operative effort between UNICEF and the Scandinavian Voluntary Organizations on an international scale, was created specifically to administer B.C.G. vaccination. The papers presented at the 1949 conference included the technique of tuberculin testing, the local reaction in B.C.G. vaccination, production of B.C.G. vaccine, and laboratory control of B.C.G. vaccine.

—W. R. BETT.

BERGQVIST, S. (1951). **Attempts to heighten the effect of B.C.G. vaccination with hyaluronidase.**—*Amer. Rev. Tuberc.* **64,** 442-447. [French and Spanish summaries.] **1970**

Ninety-five schoolchildren were vaccinated with B.C.G. vaccine and hyaluronidase, and 71 were vaccinated normally. 61% of the hyaluronidase group gave positive Mantoux reactions after 29 days and 99% after 50 days. The corresponding figures for the control group were 35% and 91%.

The chances of increasing the effect of the B.C.G. vaccine by adding hyaluronidase were discussed.—G. DAVIES.

MØLLER, P. (1952). **On vaccination with vole bacilli.**—*Acta tuberc. scand.* **26,** 163-169. [In English.] **1971**

G. pigs vaccinated with the vole bacillus and with B.C.G., both inoculated subcutaneously in doses of 10 mg., acquired the same degree of immunity. Thus, vaccination with the former does not appear to be superior to vaccination with the latter.

GERONIMUS, L. H. & BIRKELAND, J. M. (1951). **The relationship between the virulence of tubercle bacilli and the vigor of their oxidative attack upon certain substrates.**—*Amer. Rev. Tuberc.* **64,** 520-533. [French and Spanish summaries. English summary copied *verbatim.*] **1972**

Resting cells of the H37 strain of human tubercle bacillus, as well as of four other strains of *Mycobacteria,* have been shown to increase their oxygen consumption in the presence of L(+) lactic acid. The stimulation was found to increase as the pH of the suspending fluid was varied from pH 7·5 to pH 6·2. Stimulation was greatest, at any one pH, for the saprophyte *M. phlei* and was least for the pathogen H37. Formate, acetate, propionate, and butyrate also increased the oxygen consumption of the five strains mentioned above, as well as that of a highly virulent avian strain. With these substances, also, the pathogens were least stimulated and the avian strain, known to be highly virulent, was less stimulated than the moderately virulent variant of the H37 strain. With lactate in physiologic concentrations as substrate, it was possible, using stimulation of oxygen uptake as a criterion, to discriminate between highly virulent and attenuated strains of human tubercle bacilli otherwise indistinguishable from each other in every way except in their virulence for experimental animals. In this situation, also, there was a negative correlation between vigor of oxidative attack and degree of virulence. It is suggested that one of the necessary conditions for virulence of tubercle bacilli might be the tendency to make a relatively weak attack upon certain oxidizable substances present in host tissues.

ALLEN, H. R. (1952). **Preliminary observations on the subsurface cultivation of *Mycobacterium johnei,* and the preparation of johnin from such cultures.**—*Vet. Rec.* **64,** 25. **1973**

The medium and technique employed in the sub-surface cultivation of *M. johnei* and the use of johnin from such culture were described.

—G. V. LAUGIER.

SCHMAGER, A. & KLUDAS, M. (1951). Morphologische Studien an Corynebakterien mit dem Phasenkontrastmikroskop. **[Study of corynebacteria with the phase contrast microscope.]**—*Zbl. Bakt. I. (Orig.)* **156,** 502-507. **1974**

Phase-contrast microscopy is particularly suitable for the study of corynebacteria, giving a clearer picture of their structural details and facilitating differentiation between pathogenic and non-pathogenic organisms.—W. R. BETT.

RICE, C. E., KONST, H. & DUTHIE, R. C. (1951). **Studies by complement-fixation methods of malleins produced in broth and synthetic media. I. Relative immunizing activities in horses and rabbits.**—*Canad. J. comp. Med.* **15,** 284-291. [Authors' summary copied *verbatim.*] **1975**

Serial bleedings from horses and rabbits

under immunization with malleins prepared in broth or synthetic media were tested by two complement-fixation techniques with these two kinds of mallein. When sufficient amounts of each antigen were used to produce maximum fixation of complement, the serum titres recorded with the "broth" and "synthetic" malleins were relatively comparable.

Although the broth malleins appeared on the whole to be better immunizing agents than the synthetic malleins, no evidence was obtained by the methods employed of any significant qualitative difference in the antibodies produced.

BRINDLE, C. S. & COWAN, S. T. (1951). **Flagellation and taxonomy of Whitmore's bacillus.** —*J. Path. Bact.* 63, 571-575. [Authors' summary copied *verbatim.*] 1976

Flagella were stained on seven of eight strains of Whitmore's bacillus. In every strain the attachment of the flagellas was polar. The species is closely related to the glanders bacillus (a non-motile organism) and the type of flagellation warrants inclusion in the family Pseudomonadaceae. The two species should form a genus, but at present this genus should not be combined with any accepted genus of the family Pseudomonadaceae.

The complete citation of Whitmore's bacillus is *Loefflerella pseudomallei* (Whitmore) Gay *et al.*

GARRY, M. W. & KOCH, M. L. (1951). **Chronic melioidosis: bacteriologic and clinical correlation in diagnosis.**—*J. Lab. clin. Med.* 38, 374-383. [Authors' summary slightly modified.] 1977

A case of chronic melioidosis is presented which demonstrated some of the features similar to those found in *Pseudomonas pyocyanea* infections. The diagnosis was established by close clinical and laboratory correlation. Aureomycin, 0·5 g. every four hours by mouth, and tyrothricin packs continuously applied to the cutaneous affection appeared to effect a favourable response with disappearance of systemic reaction and healing of the skin lesions. This patient represents, so far as we are able to ascertain, the first case of chronic melioidosis completely indigenous to continental United States.

DINTER, Z. (1950). Neuere Forschungsergebnisse auf dem Gebiet des Schweinerotlaufs. [**Recent studies on swine erysipelas.**]—*Nord. Vet.-Med.* 2, 833-853. [In German. Abst. from author's summary.] 1978

The more important recent advances in swine erysipelas research in Germany include active immunization, demonstration of constitutional and herd resistance, establishment of the antigenic structure and transmission by *Stomoxys calcitrans*.—H. BOYD.

I. VERGE, J., GORET, P., JOUBERT, L. & CAUCHY, L. (1950). Recherches sur la sensibilité *in vitro* du bacille du rouget aux antibiotiques. [*In vitro* **tests of sensitivity of** *Erysipelothrix rhusiopathiae* **to antibiotics.**] —*Ann. Inst. Pasteur.* 79, 145-149. 1979

II. VERGE, J., GORET, P., JOUBERT, L. & CAUCHY, L. (1950). Recherches sur la sensibilité *in vivo* du bacille du rouget aux antibiotiques. [*In vivo* **tests of sensitivity of** *Erysipelothrix rhusiopathiae* **to antibiotics.**] —*Ibid.* 150-157. 1980

I. *Erysipelothrix rhusiopathiae* failed to grow after 24–48 hours in peptone water in the presence of penicillin at a concentration of 0·06–0·07 units per ml. (strain D) or 0·03–0·04 units per ml. (strain M). When the test was made on "medium T" instead of in peptone water the effective penicillin concentrations were about ten times as great. The organism was found to be relatively insensitive to streptomycin, requiring 25–60 units per ml. of crystalline streptomycin, or 30–40 units per ml. of an acid extract of *Streptomyces griseus*, to prevent the growth of strain D after 24 hours in peptone water.

II. In mice, protection against infection by a 24-hour culture of strain D was afforded by 400–800 units penicillin, given at 12-hour intervals. A younger culture in ascites medium was more virulent and could not be countered with penicillin. The course of infection in the controls was very variable. The protective action of streptomycin was only moderate. None of the animals were immune one month later.—N. DEAN.

DEDIÉ, K. (1951). Erfahrungen bei der Herstellung und Prüfung der Riemser Rotlauf-Adsorbatvakzine. [**Production and testing of swine erysipelas adsorbate vaccine on the Island of Riems.**]—*Exp. Vet.-Med.* 3, pp. 90-107. 1981

Details were given of the methods of preparation of the vaccine and the results of protection tests in mice and pigs carried out between 1947 and 1950. Pigs were more reliable than mice as test animals. Results in the field had been variable: those for 1950 were promising—E. G. WHITE.

SCHOOP, G. (1951). Listeria monocytogenes, ein Krankheitserreger unserer Haustiere. [*Erysipelothrix* (*Listeria*) *monocytogenes* **in-**

fection in domestic animals.]—*Dtsch. tierärztl. Wschr.* **58,** 293-294. **1982**

S. briefly reviewed the literature and his own experiences concerning the incidence, pathology and treatment of *E. monocytogenes* infection in ruminants, pigs, poultry and rabbits and referred to the pathogenicity of the organism for man.—G. P. MARSHALL.

GIRARD, K. F. & MURRAY, E. G. D. (1951). *Listeria monocytogenes* **as the cause of disease in man and animals, and its relation to infectious mononucleosis from an etiological and immunological aspect.**—*Amer. J. med. Sci.* **221,** 343-352. **1983**

In a review, with 70 references, the authors discussed the natural and experimental disease in animals and the controversial question of the aetiology of infectious mononucleosis in man. The view that infectious mononucleosis can be caused either by a virus or by *Erysipelothrix monocytogenes* accords most closely with the available experimental evidence.—E. G. WHITE.

BELIN, M. (1946). La listerellose humaine et animale en France. [**Human and animal listeriasis in France.**]—*Bull. Acad. Méd., Paris.* **130,** 227-228. **1984**

The first case of listeriasis in man in France was reported in 1921. In 1941 the disease was reported in fowls and in 1943 in rabbits, and separately in sheep. The present publication consists of a report of a case in a horse and B. is of the opinion that the disease had occurred in cattle on the same farm over the previous two years. The syndrome of the disease in animals and in man is similar in type.

He emphasized that resemblances between *Erysipelothrix* (*Listeria*) *monocytogenes* and *E. rhusiopathiae* in culture on agar and in broth and also in the morphology are important. Study of organisms cultivated in broth at 20°C. or even at room temperature is a useful method for the determination of motility. Pathogenicity tests in g. pigs are useful; the development of an intense purulent conjunctivitis following the placing of a drop of fresh broth culture on the eye, coupled with the result of an intraperitoneal inoculation—death in 6–8 days and the development of multiple necrotic nodules in the liver, these often being at the limit of visibility—are important.

GAUTHIER, J. L. (1950). Action du chloramphénicol *in vitro* et *in vivo* sur quelques pasteurelles animales. [**Action of chloramphenicol [chloromycetin] on some** *Pasteurella* **strains of animal origin.**]—*Ann. Inst. Pasteur.* **79,** 470-472. **1985**

Strains of *Pasteurella* isolated from epidemics in pigs and sheep, and from rats, wild rabbits and birds, were inhibited *in vitro* by 0·5μg. per ml. of chloramphenicol. In mice infected with 100,000 minimal lethal doses, following the administration of chloramphenicol, introduced into the stomach in doses of 50–75 mg. per kg., there was 100% recovery in 24 hours.—N. DEAN.

SOLTYS, M. A. (1951). *Pasteurella septica* **in cats and the action of aureomycin and chloromycetin on experimental pasteurellosis.** —*Vet. Rec.* **63,** 689-691. [Author's summary modified.] **1986**

Organisms of the *Pasteurella septica* group have been isolated from mouth swabs, wounds and abscesses in cats. The mouth swab material was non-pathogenic for mice, but the material from wounds and abscesses was lethal. Aureomycin and chloromycetin, in high dilution, inhibit the growth of *Past. septica in vitro.* They also protect mice against acute infection.

LAIGRET, J. & LEBLOIS, C. (1950). Mammite à bacille de Friedländer (*K. pneumoniae*) chez la vache laitière. [**Mastitis in a cow caused by** *Bacterium friedländeri.*]—*Bull. Acad. vét. Fr.* **23,** 469-471. **1987**

A brief account of acute mastitis caused by *Bact. friedländeri* accompanied by cocci in the right hind quarter of the udder of a cow, with gross oedema, a temperature of 41°C. and a serious general condition. Penicillin given locally and parenterally 500,000 units per day for three days) was ineffective, as were combined staphylococcal vaccine and sulphone injections.—MALCOLM WOODBINE.

KLATT, C-H. & WESTERMARCK, H. (1950). Chloromycetinets, aureomycinets och streptomycinets, effekt mot mastit-coli in vitro. [**Effect of chloromycetin, aureomycin and streptomycin on mastitis caused by** *Bact. coli*]—*Nord. Vet.-Med.* **2,** 916-925. [In Swedish abst. from English summary.] **1988**

The resistance against chloramphenicol, aureomycin and streptomycin was tested of 50 strains of coliform organisms from samples of milk in which infection with such strains had been demonstrated.

At a concentration of 0·033 mg. per ml. chloramphenicol inhibited the growth of all the strains for 24 hours; at 0·05 mg. per ml., for 72 hours. At a concentration of 0·167 mg. per ml. aureomycin inhibited the growth of all the strains for 48 hours and after 72 hours it still inhibited 98%. Streptomycin at 0·33 mg. per ml. was effective for 48 hours in 92% of the strains and for 72 hours in 90%. *In vitro*

chloramphenicol was the most effective, then aureomycin and, lastly, streptomycin.

SALA, G. (1950). L'associazione cloramfenicolo + 4-4'-diamino-difenil-sulfone nel trattemento delle mastiti dei bovini. **[Treatment of bovine mastitis with chloramphenicol and 4-4'-diaminodiphenyl sulphone.]**—*Atti Soc. ital. Sci. vet.* **4,** 648-652. [English and French summaries.] **1989**

Combined action of chloramphenicol and 4-4'-diaminodiphenyl sulphone is as good as that of penicillin against streptococcal mastitis and the combination acts on penicillin-resistant forms. It is also effective against *Bacterium coli,* but not *Corynebacterium pyogenes.*
—F. R. HARRIS.

PARNAS, J., KUNICKI-GOLDFINGER, W., STEPKOWSKI, S., LORKIEWICZ, Z. & DĄBROWSKI, T. (1950). Badania nad hemolitycznymi szczepami pałeczki okrężnicy wyosobnionymi od prosiąt. **[Investigations on the haemolytic strains of *Bacterium coli* isolated from dead piglets.]**—*Ann. Univ. M. Curie-Skłod.* **5,** 355-437. [English and Russian summaries.] **1990**

The authors studied 70 haemolytic strains of *Bact. coli* isolated from dead piglets. Division into typical, intermediate and atypical strains is of little value; it was, however, suggested that no division can be made into pathogenic and non pathogenic strains of *Bact. coli.* Environmental conditions play a part in regard to variation of virulence. All the strains were haemolytic on blood agar. Strains isolated from the viscera were more virulent than those isolated from the faeces. Details were given of agglutination, precipitation and complement-fixation tests carried out. The authors found phage typing of little value.—J. R. MITCHELL.

LISSOT, G. (1949). Le coligranulome des poules. (Maladie de Hjärre.) **[Intestinal granuloma in fowls.]**—*Bull. Acad. vét. Fr.* **22,** 93-96. **1991**

A comment and résumé on the observations of Hjärre and Wramby [*V.B.* **19,** 2075] concerning a form of intestinal granuloma in fowls which, in its later stages, may closely simulate the lesions of avian type TB. The condition is said to be caused by a coliform organism. The lesions are usually restricted to the liver and the intestine.—H. PLATT.

TAYLOR, J. (1950). **Salmonellosis in man and animals.**—*Publ. Hlth, Lond.* **63,** 168-169. **1992**

A survey of food poisoning cases in Britain from January 1st, 1949 was reported. 91% of the outbreaks were due to *Salmonella* infections, *S. typhi-murium* being responsible for 75%. The foods chiefly involved were processed meat and duck eggs and it was noted that this organism and *S. enteritidis* could infect the duck's ovary. Data were given about salmonella infection in human beings, both as to incidence and species of the organism concerned. A list was given of the species found that occurred in domestic and wild animals in Britain.—J. H. HALE.

GAUMONT, R. (1950). Les salmonelloses aviaires dans le Nord de la France. **[*Salmonella* infections in fowls in Northern France.]**—*Ann. Inst. Pasteur, Lille.* **3,** 140-149. **1993**

Of 245 fowls, ducks and other species of poultry examined, *Salmonella* spp. were isolated from 16%. The commonest species were *S. gallinarum* and *S. pullorum.* In addition *S. bareilly, S. typhi-murium* and *S. hartford* were identified in a few cases.—M.C.

VAN ROEKEL, H., BULLIS, K. L., SNOEYENBOS, G. H., CLARKE, M. K. & FLINT, O. S. (1950). **Significant observations in pullorum disease eradication.**—*Proc. U.S. Livestock sanit. Ass. 54th Ann. Meeting.* pp. 175-182. **1994**

For routine blood testing a serum antigen dilution of 1 : 50 was recommended. In flocks where a "break" had occurred a dilution of 1 : 25 was preferred. The problem of "breaks" in tested flocks was discussed.—D. LUKE.

WILSON, J. E. (1951). **The control of salmonellosis in poultry with special reference to fumigation of incubators.**—*Vet. Rec.* **63,** 501-503. [Author's summary copied *verbatim.*] **1995**

Fumigation with formaldehyde (1·5 c.c. of fomaldehyde to 1 g. of potassium permanganate per cubic foot of the incubator space) is invariably lethal for *S. typhi-murium* on egg shells and on fluff, and normally has no adverse effect on hatchability provided that certain precautions are taken.

It is suggested that a lower concentration might safely be used for routine fumigation.

Where the disease persists, direct egg transmission is probable and a combined programme of agglutination testing and fumigation is necessary.

BALLANTYNE, E. E. (1951). **Bovine brucellosis control in Alberta.**—*Canad. J. comp. Med.* **15,** 101-107. **1996**

Contol measures in Alberta are along the lines of education, calfhood vaccination with

Strain 19, and blood testing. Emphasis is laid on the importance of the first measure.

—R. GWATKIN.

SANDERSON, N. V., KARN, R. H., LE GROW, W. R. & RAYMOND, O. C. (1951). **A brucellosis survey in Brant County, Ontario.**—*Canad. J. publ. Hlth.* 42, 295-298. [Abst. from authors' summary.] **1997**

The results of the survey up to date indicate that the incidence of brucellosis among the cattle population of Brant County, although not exceptionally high, is nevertheless a serious threat to the dairy industry, and possibly also a potential menace to public health. Many farm people may attain some immunity to the disease. Two unsuspected cases of undulant fever were diagnosed in the County.

WEYL, A. (1951). Tabellarische Übersicht über die staatliche Bekämpfung der Bang-Infektion des Rindes in Schweden. [**Control of brucellosis in cattle in Sweden.**]—*Mh. prakt. Tierheilk.* 3, 316-318. **1998**

W. showed on a map, accompanied by a list, details of the incidence and of official voluntary control measures and of the cost per animal of brucella control measures in Sweden.

—G. P. MARSHALL.

LEMBKE, A., ARNDT, G. & KÖRNLEIN, M. (1951). Beiträge zum Brucellose-Problem. III. Über die Beziehungen zwischen epidemiologischen Zustand und serologischen Werten bei der Bangschen Erkrankung des Rindes. [**Brucellosis. III. Epidemiology, serology and incidence in cattle.**]—*Zbl. Bakt. I. (Orig.)* 156, 510-522. [English, French and Russian summaries. Abst. from English summary.] **1999**

An account of agglutination tests and of the cultivation of brucella from the animals of a herd of 200 cows, comparison being made on the value of such methods of diagnosis in the control of the disease.

JONES, L. M. & BERMAN, D. T. (1951). **The pathogenicity of mucoid variants of brucellae for guinea pigs.**—*J. infect. Dis.* 89, 214-223. [Authors' summary modified.] **2000**

Greater numbers of mucoid *Brucella* organisms than of the parent smooth types were required to establish infection in g. pigs. Mucoid strains varied in their ability to persist in the tissues of g. pigs. Some strains could be isolated only during the first weeks following inoculation, while others persisted for as long as nine weeks. Infection with several mucoid strains resulted in the production of large abscesses in the male sex organs. Moderate lymphadenitis and splenomegaly were observed early in the infection, but regression apparently took place with the passage of time.

The mucoid cultures studied did not stimulate the production of demonstrable agglutinins in the inoculated animals for either smooth or mucoid organisms. Reversion of one strain of *Br. abortus* and one of *Br. suis* from mucoid to smooth was observed *in vitro* and *in vivo*. In mixed infections of mucoid and smooth organisms the smooth form was found to persist longer. The numbers of mucoid organisms present in the tissues decreased progressively unless a localized lesion was established, beyond which dissemination did not occur. The mucoid form was eliminated more rapidly from animals which had an established infection with smooth organisms than from a similar series of animals not previously infected with the smooth form.

STRINGER, J. L. (1951). **A county biological milk sampling scheme with special reference to** *Br. abortus*.—*Med. Offr.* 85, 127-129. **2001**

S. emphasized the value of the routine testing by g. pig inoculation of milk samples, presumably referring to the milk of commercial herds, and gave details of testing done for the Hertfordshire County Council, and he also discussed the action to be taken when milk samples prove to have contained tubercle bacilli.

BLAKE, G. E., MANTHEI, C. A. & GOODE, E. R., JR. (1952). **A milk plate test for the detection of brucellosis.**—*J. Amer. vet. med. Ass.* 120, 1-6. **2002**

A rapid plate agglutination test, using milk is described. In tests carried out it was found to be convenient, economical and accurate.

SCHLINGMAN, A. S. & MANNING, M. C. (1949). **Inactivated** *Brucella abortus* **as an immunizing agent in cattle. A preliminary report.**—*Proc. 53rd Ann. Meet. U.S. Livestock sanit. Ass.* pp. 48-57. **2003**

A virulent strain of *Br. abortus* inactivated by ultra-violet irradiation, showed promise as an immunizing agent for cattle.

—C. C. BANNATYNE.

LIVE, I. & DANKS, A. G. (1951). **The use of ether-killed** *Brucella abortus* **in saline-in-oil emulsion in a herd of cattle with brucellosis.**—*Amer. J. vet. Res.* 12, 175-182. [Abst. from authors' summary] **2004**

In a herd in which brucellosis had existed for about a year, 73 cattle negative to the agglutination test and in different stages of the reproductive cycle, ranging from nonpregnant status to seven months of pregnancy, were divided into three groups which were treated as

follows: group A was injected with strain 19 vaccine; group B was injected with ether-killed *Brucella abortus* combined with falba [a lanolin-like substance] and mineral oil; and group C was left as a control. Two heifers from each group were used in a challenge experiment, which left 67 animals in the herd for study under field conditions.

Sixty-three of the 67 animals completed the first gestation period after vaccination. Details were given.

In a challenge experiment, two heifers of group A and two heifers of group B withstood a challenge dose of 166×10^4 *Br. abortus* which produced a typical infection in one of two control heifers, all of the six being in the fifth month of gestation at the time of challenge.

No ill effects were noticed in animals of group B in different stages of gestation. On the other hand, it is not considered advisable to administer strain 19 vaccine to animals in an advanced stage of pregnancy. In this study, at least one case of abortion was attributable to vaccination with strain 19 vaccine beyond the fourth month of pregnancy.

The agglutination titres in the cattle of group A were highest soon after vaccination, then they declined sharply. In the cattle of group B agglutination production was stimulated after two months, the titres remaining constant for two months and then declining. A further dose of the ether-killed vaccine six months after the first was followed by a marked rise in agglutination production.

WEGENER, K. H. (1951). Untersuchungen bei Schweinebrucellose. [**Brucellosis in pigs.**]—*Dtsch. tierärztl. Wschr.* **58,** 301-304. **2005**

An account of the demonstration of *Br. suis* infection in pigs in Germany. Of 33 positive reactors to the agglutination test, out of a batch of 89, lesions of brucellosis were present in the uterus of 18 and the organism was isolated from three.—G. P. MARSHALL.

SZAFLARSKI, J. & STEFFEN, J. (1951). Bruceloza u psów. [**Brucellosis in dogs.**]—*Med. weteryn.* **7,** 536-537. **2006**

Samples of blood from town dogs yielded negative reactions to the agglutination test for brucella infection, whereas 16% of samples from country dogs yielded positive or doubtful reactions. The authors suggested that dogs might spread the infection.—J. R. MITCHELL.

BOURNE, L. B. (1951). **The prevention of skin disease in veterinary surgeons.**—*Vet. Rec.* **63,** 721-722. **2007**

B. discussed the literature including Alleman's contribution (1951) on the efficacy of barrier creams against *Brucella abortus, Erysipelothrix rhusiopathiae* and the effect of dinitrocresol solution on skin. The criteria necessary in a good barrier cream were enumerated and the specific needs for veterinary surgeons were emphasized.—G. V. LAUGIER.

RENOUX, G. (1951). Traitement de la brucellose (*Br. melitensis*) expérimentale du cobaye par le BAL (2, 3 dimercaptopropanol ou dithioglycérol) seul ou associé au chloramphénicol ou à l'auréomycine. [**Treatment of brucellosis with B.A.L. alone or in combination with chloramphenicol or aureomycin.**]—*Ann. Inst. Pasteur.* **81,** 541-549. **2008**

B.A.L. exerts a protective action against brucellosis in g. pigs, and in suitable proportions with chloramphenicol the action is more marked. The effective treatment is with 10 mg. of B.A.L. and 30 mg. of chloramphenicol, in daily doses. In association with aureomycin B.A.L. has no protective action.—F. R. HARRIS.

MEYER, K. F. (1950). **What is known about immunity to brucellosis.**—*Proc. U.S. Livestock sanit. Ass. 54th Ann. Meeting.* pp. 87-97. **2009**

M. reviewed existing knowledge of immunity and resistance to brucella infections. Natural resistance is manifest by failure to develop clinical symptoms despite infection. Young animals and children are not readily infected. M. considered that resistance might be related to an inherited constitutional factor. The mechanism of immunity following infection is vague. It does not depend on the persistence of living organisms in the tissues. The role of antibodies and relationship to allergy is not clear. Of artificial immunization it is stated that highly infective and invasive strains of *Brucella* produce a higher degree of immunity than do attenuated strains.—C. C. BANNATYNE.

WILLEMS, R. (1951). La tularémie. [**Tularaemia.**]—*Bull. Off. internat. Epiz.* **36,** 140-150. **2010**

France and Belgium have now been added to the countries where tularaemia has been diagnosed in man and in animals. Epidemiologically the most important wild animals that maintain and spread the disease are rodents, particularly hares, and in some regions water rats. In g. pigs, and probably also in man, the organisms can penetrate intact skin and mucous membranes; insect vectors spread infection from animal to animal. Methods of diagnosis were discussed.—A. MAYR-HARTING.

UHLENHUTH, P. & SCHOENHERR, K. E. (1951). Tierexperimentelle Untersuchungen über die

Therapie der Leptospirosen. **[Therapy of *Leptospira canicola* infection in golden hamsters.]**—*Z. ImmunForsch.* **108,** 289-300. **2011**

A report of comparative controlled therapeutic tests of aureomycin, terramycin, chloromycetin (chloramphenicol) and various immune sera in golden hamsters infected with highly virulent *L. canicola*. Of the antibiotics, aureomycin hydrochloride injected intraperitoneally in 1 mg. doses at eight-hourly intervals for three days was effective when commenced at any time up to 32 hours after infection; terramycin given similarly in 1·17 mg. doses was effective up to 48 hours after infection and afforded some protection when given 56 and 64 hours after infection. Chloromycetin had no therapeutic effect. Of three immune sera tested only one, prepared by the authors from rabbits, and given similarly to the antibiotics in doses of 0·1 ml., was effective.—F.E.W.

Boquien, V., Kolochine-Erber, Hervouet, D. & Duhamel. (1950). Deux cas de maladie des porchers (leptospirose à *Leptospira pomona*). **[Two cases of swineherds' disease (*L. pomona* infection).]**—*Bull. Acad. Méd., Paris.* **134,** 137-140. **2012**

Two swineherds contracted the disease in the same establishment. Serological tests on 47 pigs at slaughter showed an agglutination titre of 1 : 1,000 or higher in 34 of them.

—E. G. White.

Carrére, L. & Roux, J. (1952). Sur une enzootie saisonnière des soffies de l'Hérault. **[An epidemic of *Clostridium chauvoei* infection in fish.]**—*Ann. Inst. Pasteur.* **82,** 111-112. **2013**

Seasonal epidemics in freshwater fish occur in the Hérault river and cause heavy mortality; in a 12 km. stretch of the river several tons of carcasses have been collected. Examined just before death, the fish had haemorrhagic lesions infiltrated with gas in the muscles. *Cl. chauvoei* was readily isolated from the muscle lesions and is believed to have been the cause of the epidemic. The origin of the contamination of the water with this organism has not been determined, but carcasses of sheep or effluent from abattoirs are suggested.—M.C.

Von Dinter, Z. & Kull, K.-E. (1950). Aktive Immunisierung gegen den Botulismus beim Nerz. **[Active immunization against botulism in mink.]**—*Nord. Vet.-Med.* **2,** 906-915. [In German. Abst. from English summary.] **2014**

The authors consider that active immunization is the best measure for the protection of mink from botulism. The toxin concerned in a number of fatal outbreaks of botulism in 1949 was type C. It was therefore assumed—though still with reservation—that the C toxin should be looked upon as the most frequent cause of botulism in mink in Sweden. The authors prepared an aluminium hydroxide adsorbate type C toxin vaccine. White mice were suitable experimental animals for titration of the vaccine. Details were given of tests on mice and g. pigs, and on mink. A 1 ml. dose of the vaccine protected mink against a challenge dose of toxin, fed five weeks later, which killed controls within 12 hours.

Lowenthal, J. P. & Lamanna, C. (1951). **Factors affecting the botulinal hemagglutination reaction, and the relationship between hemagglutinating activity and toxicity of toxin preparations.**—*Amer. J. Hyg.* **54,** 342-353. [Abst. from authors' summary.] **2015**

A study was made of the factors affecting the haemagglutination reaction with toxic preparations of *Clostridium botulinum* type A and a standardized procedure was presented for measuring the haemagglutinating activity of supernatant fluid from diluted autoclaved cultures and purified preparations. Evidence was given which indicated a lack of identity of haemagglutinating activity with toxicity of the type A botulinus organism.

Flint, J. C. & Jensen, R. (1951). **Pathology of necrobacillosis of the bovine foot.**—*Amer. J. vet. Res.* **12,** 5-13. **2016**

One hundred and sixteen naturally-diseased feet were examined macroscopically (in frontal serial gross sections cut when frozen) and histologically. In 62 cases (37 of necrotic dermatitis of the coronary band, 14 of necrosis of the interdigital tissue, and 11 of chronic or healed arthritis of the coffin joint) the lesions were considered to have arisen from surface infection through the skin, and except in the case of the healed arthritis lesions, they contained *Fusiformis necrophorus* which was probably responsible for the observed necrosis, and for some of the inflammation and arthritis, but neither predisposing causes nor the presence of some other primary infective agent were determined. Twenty-five of the feet had lesions thought to be due to haematogenous infection—5 with osteitis of the distal epiphysis of the metacarpus or metatarsus, rod-shaped bacteria being present in sections, and 20 had laminitis of undetermined cause. Twenty-four cases were thought to be due to trauma, and the remaining five were of miscellaneous nature.

Living *F. necrophorus* were injected into the left common digital artery of eight calves,

and local lesions, differing from those in the first group of 62 natural cases, developed in the bones, joints, tendons and skin. The authors suggest the following definition: Necrobacillosis of the bovine foot (foot rot) is a necrotizing infection of the tissues immediately proximal to the coronary band or of the interdigital tissues, often complicated by arthritis of the coffin joint, and caused, in part, by *F. necrophorus* penetrating from the surface.—E. COTCHIN.

HITE, K. E., LOCKE, M. & HESSELTINE, H. C. (1949). **Synergism in experimental infections with nonsporulating anaerobic bacteria.**—*J. infect. Dis.* **84**, 1-9. **2017**

The literature on bacterial synergism was discussed and further data provided from experiments in mice with *Fusiformis necrophorus, F. fusiformis,* and anaerobic streptococci. The infectivity of various mixtures of the organisms was assessed from the severity of the lesions resulting from intradermal injections. Anaerobic members of the genus *Bacteroides* particularly *F. necrophorus* produced a synergistic effect, as did also the anaerobic streptococci to a lesser degree. Heat-killed cells of the former species were also active in enhancing *Str. liquefaciens* infection, and although an active fraction was not extracted from the cells of *F. necrophorus,* it was concluded that in this species at least the virulence-enhancing property is intimately associated with the cell substance.—J. KEPPIE.

JONSEN, J. & THJÖTTA, T. (1950). **Studies on *Bacteroides*. IV. Electron micrographs of *Necrobacterium necrophorus*.**—*Acta. path. microbiol. scand.* **27**, 152-158. [In English. Abst. from authors' conclusions.] **2018**

The electron micrographs of *Necrobacterium* [*Fusiformis*] *necrophorus* have shown that a 48-hour-old culture of this organism contains individuals in all stages of development, some having an opaque well developed protoplasm, some which appear to be becoming transparent and some on the point of autolysis. The cell wall and the cytoplasmatic membrane are seen very distinctly in some micrographs.

The spherical bodies occurring in cultures appear to have only a poor supply of protoplasm. Whether or not this may indicate degenerative forms is not known.

STRAUSS, R. E. & KLIGMAN, A. M. (1951). **The use of gastric mucin to lower resistance of laboratory animals to systemic fungus infections.**—*J. infect. Dis.* **88**, 151-155. **2019**

The resistance of mice to systemic fungus infections set up by intraperitoneal injection was found to be markedly reduced when the fungus was suspended in 5% gastric mucin. Fatal infections were uniformly produced by this method with *Blastomyces dermatitidis, Coccidioides immitis, Cryptococcus neoformans, Candida albicans,* with the yeast phase of *Histoplasma capsulatum,* and with *Nocardia asteroides* in concentrations of 1 : 50 or stronger. With other organisms used, the extent and rapidity of infection was greatly increased. Gastric mucin had no effect when the suspensions of fungi were placed on the chorio-allantoic membrane of the chick embryo.

MENGES, R. W. & KINTNER, L. D. (1951). **Bovine histoplasmosis. Case report.**—*N. Amer. Vet.* **32**, 692-695. **2020**

A case of histoplasmosis caused by the yeast phase of *H. capsulatum* in an Aberdeen Angus cow was described: histoplasmin reactors were found among cattle, horses, sheep, pigs and fowls in the vicinity. Histoplasmin sensitivity rates were found to increase with age, and were higher in Missouri than in Kansas.

—CLIVE BRIGGS.

VORONOV, D. L. (1950). **[Eradicating epizootic lymphangitis of horses on a seasonal plan.]** —*Veterinariya, Moscow.* **27**, No. 5. pp. 24-26. **2021**

A claim is made that equine epizootic lymphangitis was eradicated fom an area by systematic treatment (the method used not being stated), together with housing of affected animals in order to prevent the spread of infection by insects, and the use of insect-repellent dressings on lesions, together with general disinfection.

—F.A.A.

MCCLUNG, N. M. (1950). **Morphological studies in the genus *Nocardia*. II. Cytological studies.** —*J. Bact.* **59**, 589-602. [Abst. from author's summary.] **2022**

Three types of development were revealed by study of stained preparations of six-month-old cultures of 46 strains of *Nocardia.* Strains that are most bacterial in colonial texture produce a preponderance of coccoid cells. Pasty-textured forms develop pleomorphic rods for the most part, and waxy- and cartilaginous-textured forms show "ghost filaments", homogeneously stained hyphae, and filaments with discrete cytoplasmic condensations separated by clear areas.

The 46 strains studied were Gram-positive and non-acid-fast and had a marked affinity for the basic aniline dyes.

HAGA, M., OMURA, Y. & SUGANO, S. (1951). **[Pulmonary actinomycosis in cattle and swine.]**—*Jap. J. vet. Sci.* **13**, 97-103. [English summary.] **2023**

Cases of actinomycosis of the lung in cattle

and swine from the Sapporo slaughter-house were examined. In cattle lesions were present beneath the pleura and throughout the substance and the pleura was thickened. The lesions varied from 0·5 cm. to 7 cm. in diameter. In swine the lesions were less numerous. In histological examination characteristic lesions were seen with radially arranged clubs.—KOGI SAITO.

GERRETSEN, F. C. & HAAGSMA, N. (1951). **Occurrence of antifungal substances in *Brassica rapa*, *Brassica oleracea* and *Beta vulgaris*.** [Correspondence.]—*Nature, Lond.* **168**, 659. **2024**

The ether extract of a steam distillate of rape [*Brassica rapa*] tubers in concentrations of $1:10^5$ prevented growth of several fungi, including *Aspergillus, Cryptococcus* [*Histoplasma*], *Penicillium* and *Trichophyton* spp. Similar substances occurred in beet [*Beta vulgaris*] and cabbage [*Brassica oleracea*].—JOHN SEAMER.

MORNET, P., ORUE, J. & MARTY, J.-P. (1951). Note sur le traitement de la péripneumonie bovine par la pénicilline la streptomycine et certains dérivés sulfamides. Action comparée avec le novarsénobenzol. **[Treatment of bovine contagious pleuro-pneumonia with penicillin, streptomycin and sulphonamides.]** —*Bull. Acad. vét. Fr.* **24**, 213-218. **2025**

Figures and graphs were given to show the effectiveness of penicillin, streptomycin, sulphonamides and novarsenobenzol [neoarsphenamine] in the treatment of bovine contagious pleuro-pneumonia, under severe conditions during the rainy season in French Guinea.

Streptomycin *in vivo* had a definite antibiotic power against the causal agent whereas penicillin had little. A derivative of *p*-amino-sulphonyl-benzene (amino-2-methyl-diazine) suitable for injection gave exceptionally good results. *p*-Amino-benzene-sulphonamido-thiazole was ineffective. Novarsenobenzol is a good therapeutic agent for the disease; its price is lower than that of streptomycin and of *p*-amino-sulphonyl-benzene.—G. DAVIES.

MELÉN, B. (1952). **The susceptibility of pleuro-pneumonia-like organisms to the in-vitro action of some antibiotics.**—*Acta path. microbiol. scand.* **30**, 98-103. [In English. Abst. from author's summary.] **2026**

In tests against 20 strains of pleuropneumonia-like organisms derived from human beings, penicillin was not effective in a concentration of 800 I.U. per ml.; the minimum inhibitory concentrations of streptomycin were 5–10 μg. per ml.; of dihydrostreptomycin 20–80 μg. per ml.; of aureomycin 0·32–1·25 μg. per ml.; of chloramphenicol 2·5–10 μg. per ml.; and of terramycin 0·16–0·63 μg. per ml. It was observed that pleuropneumonia-like organisms may, *in vitro*, develop increased resistance to streptomycin.

WILLIAMS, V. J. & MOIR, R. J. (1951). **Ruminal flora studies in the sheep. III. The influence of different sources of nitrogen upon nitrogen retention and upon the total number of free microorganisms in the rumen.**—*Aust. J. sci. Res.* Ser. B. **4**, 377-387. **2027**

The influence of different sources of nitrogen, fed at a constant level, upon the nitrogen balances and numbers and types of ruminal micro-organisms in growing lambs was determined in a replicated feeding trial. In each diet the test nitrogen contributed 40% of the total nitrogen and the crude protein content of the whole diet was very close to 10%.

The different sources of nitrogen tested (linseed, subterranean clover seed, egg, casein, urea and urea plus methionine) varied significantly in their biological value, *i.e.*, capacity to promote nitrogen retention in growing lambs, from $68·6 \pm 1·52$ (urea) to $86·7 \pm 4·28$ (egg). They also varied markedly in their capacity to promote bacterial growth in the rumen of both growing lambs and mature sheep, as indicated by ruminal bacterial counts.

The value of methionine, as a supplement to urea, in improving nitrogen retention in growing lambs apparently depends largely on its stimulating effect on bacterial growth in the rumen, thus increasing the amount of bacterial protein available to the host.

Some of the morphological characteristics of the ruminal bacteria on the various diets are presented and discussed.—R. L. REID.

HARRISON, A. P., JR. & HANSEN, P. A. (1950). **The bacterial flora of the cecal feces of healthy turkeys.**—*J. Bact.* **59**, 197-210. [Authors' summary modified.] **2028**

Caecal faeces were studied in some detail in order to determine the bacterial flora of the caeca of healthy turkeys. Twelve faecal samples, each from a different bird, were evaluated, three flocks being represented. The flora of birds of different flocks was found to vary in no greater degree than the flora of birds of the same flock. Seven different media were employed for the isolation of cultures. Trypticase soya glucose agar plates incubated anaerobically gave the highest counts of the various media used. The plate counts on this medium averaged about 13 billion per g. sample.

Members of the following 12 genera were identified: *Bacillus, Bacterium, Borrelia, Corynebacterium, Escherichia, Lactobacillus,*

Micrococcus, Paracolobactrum, Pediococcus, Sarcina, Spirillum and *Streptococcus*. More than 20 species were isolated. The great bulk of the bacterial population, however, was composed of but few genera and species.

Anaerobic lactobacilli (the *Lactobacillus bifidus* type) were the most numerous bacteria in the caecal faeces of the turkeys tested, making up about 50 per cent of the total cultivable flora. (Facultative anaerobic lactobacilli were also present, but these existed in relatively small numbers.) Gram-positive, non-spore-forming rods other than lactobacilli and anaerobic streptococci were the next in predominance. Members of the genus *Micrococcus* were found to be the most variable; some faeces contained them in large numbers whereas they were never recovered from many of the turkeys. Coliforms and "enterococci" existed in relatively small numbers, each usually comprising less than 1 per cent of the flora. It is apparent from the above that in the caecal flora anaerobic bacteria were in the majority, and that almost the entire flora was composed of Gram-positive organisms.

DUGUID, J. P. (1951). **The demonstration of bacterial capsules and slime.**—*J. Path. Bact.* **63,** 673-685. [Author's summary copied *verbatim.*] 2029

A comparative trial was undertaken of the main methods for demonstrating bacterial capsules and slime. Most methods were found liable to frequent failure in demonstrating capsules, and most methods failed altogether to demonstrate loose slime. In particular, methods involving drying and fixation often produced gross shrinkage of the capsules and slime, so that these became unrecognisable. Of the dry-film methods, the India-ink method of Butt, Bonynge and Joyce was found the most reliable for capsules. The eosin-serum method of Howie and Kirkpatrick was found successful for capsules, except those of small size, and in addition was one of the very few methods found capable of demonstrating loose slime. The wet-film India-ink method was preferred to all others, as the most reliable, informative and generally applicable; it proved consistently successful for capsules, even very small capsules, and for loose slime, showing these in their natural form and size without shrinkage. A description is given of this method, and of its use for measurement of capsule size. In an investigation by the wet-film India-ink method, 37 of 40 strains of *Bact. aerogenes* were found to be capsule-forming and 3 strains purely slime-forming. Of 55 *Bact. coli* strains, 2 were found to be capsule-forming, 8 slime-forming and 45 neither capsule-forming nor slime-forming to a clearly demonstrable extent.

PREUNER, R. & VON PRITTWITZ UND GAFFRON, J. (1951). Über feulgenpositive Körper in Bazillen und Bakterien und ihr Verhalten gegenüber Streptomycin und Penicillin. **[Feulgen-positive bodies in bacteria and their reaction to streptomycin and penicillin.]** —*Zbl. Bakt. I.* (*Orig.*) **157,** 244-250. 2030

Feulgen-positive bodies in bacteria are not artefacts; their division is prevented by streptomycin, but not by penicillin. They contain thymonucleic acid.—F. R. HARRIS.

See also absts. **2259-2260** (tubercle bacilli in milk); **2300** (enumeration of tubercle bacilli by surface plate count); **2308-2313** (reports, India); **2314** (book, TB.); **2315** (book, bacterial cytology); **2316** (catalogue of micro-organisms maintained in Canada).

DISEASES CAUSED BY PROTOZOAN PARASITES

FELSENFELD, O., KADISON, E. R. & ISHIHARA, S. J. (1951). *In vitro* **and** *in vivo* **tests with newer antibiotics against** *Endamoeba histolytica.*—*Amer. J. publ. Hlth.* **41,** 1078-1081. 2031

The action of various antibiotics against *E. histolytica* were tested alone and in combination. Combinations of terramycin and neomycin with bacitracin produced good results in human beings. The danger of destroying the bacterial flora in animals and in man was discussed.

—JAS. G. O'SULLIVAN.

HAWKING, F. & THURSTON, J. P. (1951). **The persistence of metacyclic trypanosomes in the blood.**—*J. trop. Med.* (*Hyg.*). **54,** 185-186. [Authors' summary copied *verbatim.*] 2032

Metacyclic trypanosomes (*T. rhodesience*) were injected intravenously into mice; one hour later the blood was infective for other mice confirming that the trypanosomes were still present after this interval. It is suggested that the persistence (or non-persistence) of metacyclic trypanosomes in the blood deserves further investigation.

KRANEVELD, F. C. & MANSJOER, M. (1950). Onderzoekingen over de gevoeligheid voor surra. I. Infectieproeven met een Trypanosoma bij caviae, honden en paarden. **[Experimental infection of g. pigs, dogs and horses with** *Trypanosoma evansi.*]—*Hemera Zoa.* **57,** 88-93. [English and French summaries. Abst. from summaries.] 2033

One individual *T. evansi* was injected subcutaneously into each of 286 g. pigs, 15 dogs

and 10 horses; 258 of the g. pigs, 12 of the dogs and 8 of the horses proved to be sucessfully infected. With regard to the animals which developed no symptoms, the possibility cannot be excluded that failure to infect was caused by technical errors.

The blood was microscopically examined (three times daily, up to ten fresh smears). The period of incubation in horses varied from 8–33 days. In g. pigs the incubation period was at most 63 days. The g. pigs weighed 320–340 g. and up to five fresh smears were made twice daily. The nutritional status of the horses and g. pigs was good.

In dogs it seemed that nutrition influenced the rate of propagation of the trypanosomes. The incubation was 5–17 days. In lean animals the period of incubation was longer and failure to infect was restricted to the lean animals.

TATE, P. (1951). **Antagonism of *Spirillum minus* infection in rats towards *Trypanosoma lewisi* and *T. equinum*.**—*Parasitology*. **41**, 117-127. [Author's summary slightly modified.] **2034**

Rats infected with *Spirillum minus* are strongly resistant to infection with *T. lewisi* and *T. equinum* if inoculated with these parasites shortly after inoculation with *S. minus*. The resistance is most highly developed for a period of from 2 to 4 weeks after inoculation with *S. minus*. Simultaneous inoculation of rats with *S. minus* and either of the trypanosomes does not influence the course of the resulting trypanosome infection.

Rats inoculated with *T. equinum* during the period of acute infection with *S. minus* develop only a very slight transient primary infection with the trypanosome and may survive for many weeks, up to 49, whereas control rats die in 5–17 days. Usually the resistant rats ultimately die from a relapse of the *T. equinum* infection. Similarly, in rats inoculated with *T. lewisi* during the resistant phase due to an infection with *S. minus*, the primary acute infection with the trypanosome is suppressed and the rats develop a slight or subpatent infection.

The non-specific resistance to trypanosomes conferred by the acute *S. minus* infection soon disappears and is replaced by a specific trypanosome resistance which is active only against reinoculation with the same species of trypanosome. Thus, in this phase of resistance, a rat infected with *T. equinum* is refractory to reinoculation with *T. equinum*, but has no resistance to superinoculation with *T. lewisi*. Conversely, a rat infected with *T. lewisi* is refractory to reinoculation with that species but it is as susceptible to superinoculation with *T. equinum* as a normal rat.

TERACHE, P. (1950). Chimiothérapie des trypanosomiases animales au Congo belge. **[Chemotherapy of animal trypanosomiasis in the Belgian Congo.]**—*Conf. Afr. Tsetse & Trypanosomiasis, Brazzaville*. pp. 274-294. **2035**

This general article surveys past and present chemotherapeutic agents and illustrates the problem of finding a general trypanocide capable of rendering the host free of the protozoa concerned at doses below toxic level. Curative and preventive treatment are independent. The choice of agent is a function of trypanosome species, the animal affected and its general and nutritional state. The arsenicals, antimony compounds, germanin [suramin], surfen C, [bis-2-methyl-4-aminoquinolyl-6-melamine], diamidines and phenanthridines are all considered in some detail.—MALCOLM WOODBINE.

GIARMAN, N. J. (1951). **Antibiotic lactones and synthetic analogs. III. Efficacy in experimental trypanosomiasis.**—*J. Pharmacol.* **102**, 183-195. [Author's summary copied *verbatim*.] **2036**

A series of 23 analogous lactones and 12 analogous furans have been studied for *in vivo* trypanocidal activity. Chemotherapeutic activity was dependent upon: the constitution of the ring system; the position and nature of the substituent groups; and the degree and position of unsaturation. The furan nucleus with proper substitution was shown to possess intrinsic chemotherapeutic potency. The acid, aldehyde, and alcohol of furan were capable of curing some, but never all, infected animals. Saturation of the furan nucleus abolished this activity. A 5-nitro substitution in the furan nucleus greatly enhanced the chemotherapeutic potency. Nitrofurazone (5-nitro-2-furaldehyde semicarbazone) cured 100 per cent of infected mice with single non-toxic oral or subcutaneous doses. The chemotherapeutic index of this drug, LD_{50}/ED_{50}, was calculated as 2·80 when given orally, and 3·04 when given subcutaneously. Certain factors influencing this chemotherapeutic efficacy have been studied. The unsaturated lactones failed to cure the infected animals, but some significantly delayed their death. The α, β-position of unsaturation in either the 5-membered γ-lactone rings or the 6-membered δ-lactone rings was much more effective than the β, γ-position of unsaturation. Saturated lactones, like saturated furans, were devoid of activity.

LOURIE, E. M. & WALKER, J. M. (1951). **Dependence of the toxicity of antrycide methylsulphate in mice on the volume of a dose injected subcutaneously.**—*Brit. J. Pharmacol.* **6**, 630-633. **2037**

Dose volume must be quoted in the LD50 for a quick-action lethal substance. Antrycide methyl sulphate gives a sharp peak in blood concentration on the height of which survival of the host depends. Trypanosomes are readily killed at levels in the blood lower than those which kill the host.—F. R. HARRIS.

WATANABE, M., HAMAKAWA, I., IWATA, A. & HEMMI, T. (1949). [**Trichocidin—a new antibiotic against protozoa, produced by a *Penicillium* in the culture media. I. Trichomonacidal action of trichocidin. II. Comparison of the production of trichocidin and penicillin at various temperatures.**]—21*st Rep. Govt. exp. Sta. Anim. Hyg., Tokyo*, 1949. pp. 77-85 & 87-92. [Absts. from English summaries.] **2038**

I. The active substance was produced on the fourth day of culture, and reached its maximum potency on the eighth day, the activity declining from the twelfth.

II. Trichocidin was produced at 20°C., too low a temperature for the production of penicillin.—JAS. G. O'SULLIVAN.

KUPROWSKI, M. (1950). Entero-hepatitis infectiosa u indyków na terenie woj. wrocławskiego. [**Blackhead in the district of Wroclaw, Poland.**]—*Med. weteryn.* **6**, 461 463. **2039**

K. reported an outbreak of blackhead among 60 turkeys imported from Gt. Britain. P.M. examination revealed typical lesions and *Heterakis gallinae* were present in the intestinal contents. As K. was unable to demonstrate the presence of *Histomonas meleagridis,* he speculated on the possibility that the causal agent may be a mould, *Mycotorula albicans.*

—JOHN R. MITCHELL.

DE VOLT, H. M., HOLST, A. P. & TROMBA, F. G. (1951). **The prophylactic action of enheptin (2-amino, 5-nitrothiazole) on blackhead (infectious enterohepatitis) of turkeys.** —*Poult. Sci.* **30**, 727-729. [Abst. from authors' summary.] **2040**

In six experiments using turkey poults exposed artificially and naturally to *Histomonas meleagridis* infection, the rate of susceptibility in combined control groups was 63·9% while in poults given enheptin the rate of susceptibility was 3·4%.

HORTON-SMITH, C. & LONG, P. L. (1951). **Enheptin-T in the treatment of histomoniasis (blackhead) in turkeys.**—*Vet. Rec.* **63**, 507. [Authors' summary copied *verbatim.*] **2041**

Enheptin-T [2-amino-5-nitrothiazole] is the most effective compound yet tested against histomoniasis in turkeys. At a concentration of 0·1% in the food it has proved excellent in the treatment of established infections. At a concentration of 0·05% in the food it has proved of some value in established infections but its value in preventive medication is considerable.

FRITZSCHE, K. & BERG, W. (1951). Über das Vorkommen der Rinderkokzidiose (Rote Ruhr der Rinder) im Kreise Prüm/Eifel). [**Coccidiosis in cattle in Rhineland-Palatinate.**]—*Tierärztl. Umsch.* **6**, 305-308. **2042**

The distribution, seasonal occurrence, clinical features, mortality and immunity of bovine coccidiosis were discussed. Treatment with methylene blue, sulphanilamide, and liquid paraffin was successful.—M. L. CLARKE.

OGATA, T. & TSUNODA, K. (1949).) [**Coccidiosis in fowls. I. Species of *Eimeria* found in Japan. II. Chemotherapy.**]—21*st Rep. Govt. exp. Sta. Anim. Hyg., Tokyo.* 1949. pp. 129-141 & 142-168. [Absts. from English summaries.] **2043**

I. *E. necatrix* and *E. tenella* were most pathogenic. *E. maxima* caused chronic diarrhoea when present in large numbers.

II. Sulphamerazine was most effective although sulphaguanidine combined with nitrofurazone gave as good results. 24 tables (in English) are given, covering many aspects of experimental chemotherapy.

—JAS. G. O'SULLIVAN.

BANKOWSKI, R. A. (1951). **Use of sulfaquinoxaline as a preventative against mild outbreaks of coccidiosis of chickens under field conditions.**—*Amer. J. vet. Res.* **12**, 349-354. [Author's summary modified.] **2044**

The results of three trials, with sulphaquinoxaline administered to chickens in a mash as a prophylactic agent, indicated that the drug was effective in alleviating clinical manifestations in chickens infected with mild caecal and some forms of intestinal coccidiosis. The effective dosage for alleviating symptoms of caecal coccidiosis by the continuous method of treatment, however, appeared to be greater than the amount which has been reported as effective in decreasing the mortality from more severe forms of the disease.

TOUMANOFF, C. & NGOC, T. T. (1951). Enquêtes sur les piroplasmoses du bétail de la Cochinchine et du Cambodge. [**Piroplasmosis**

of farm animals including buffaloes in Cochin-China and Cambodia.]—*Bull. Soc. Path. exot.* **44**, 329-337. **2045**

Piroplasmosis is common in these areas, *Theileria mutans* being the usual parasite. *Babesia bigemina* is much less common. *B. ovis* has been found in sheep with no symptoms. Piroplasms resembling *B. bigemina* in size and in shape were found in 17% of buffaloes in one province—the only province in which buffaloes were examined. The buffalo parasite had previously been described by Schein under the name *B. bubalis* as he considered it a different species from *B. bigemina*. Small piroplasms resembling *Th. mutans* were also found in buffaloes to which Schein had given the name *Th. buffali*.—W. S. MARSHALL.

LEWIS, E. A. (1950). **Conditions affecting the East Coast fever parasite in ticks and in cattle.** —*E. Afr. agric. J.* **16**, 65-77. **2046**

Moulted infected ticks (*Rhipicephalus appendiculatus*) kept unfed for over 350 days at 19° to 22°C. failed to transmit East Coast fever. Batches kept for 266 days or less transmitted the disease regularly. With batches kept 266–348 days, variable results were obtained.

Exposed under natural conditions in small paddocks at Kabete, ticks sometimes survived longer than in the laboratory. The *Theileria* disappeared as in ticks kept under experimental conditions.

Ticks kept unfed for 266–348 days may produce mild cases of East Coast fever similar to those which occur on farms in certain parts of Kenya Colony. An attempt to immunize cattle by keeping ticks for 266–348 days and then feeding them in batches of 1, 5, 10 or 50 on the ears, was not successful. Some animals reacted severely and died and some failed to react and were left susceptible. Only 22·5% contracted a mild form and recovered. About 7% did not react but were found immune on challenge.

Batches of ticks fed as larvae or nymphs on reacting cattle and then exposed to temperatures of 35° to 38°C. failed to transmit infection to cattle after moulting. Fed larvae were placed at 31° to 33°C., 34° to 35°C. or 35° to 36°C. whilst they moulted. Some were kept at this temperature for a short period after moulting and others were transferred to room temperature (19° to 22°C.) immediately the moult was complete. The nymphs were then fed on susceptible cattle. Ticks that had moulted at 35° to 36°C. failed to transmit. Some batches moulted at 34° to 35°C. and a few moulted at 31° to 33 C. were also non-infective. A number of cattle that reacted recovered, a result which may or may not have significance.

A similar experiment with ticks fed as nymphs gave similar results except that the number of cattle which failed to react in the groups feeding adult ticks that had moulted at 30° to 33°C. and 34° to 35°C. was less. The exposure of fed nymphs to 35° to 36°C. during the moult did not render them non-infective. A temperature of 37° to 38°C. did, however, produce adults in which infectivity was almost completely destroyed.

Exposure of fed larvae and nymphs to high temperature for part of the moulting period, the first 3–4 days or after the first 3–4 days at room temperature, resulted in some cattle contracting typical East Coast fever, others recovering after a mild attack and one animal failing to react and subsequently proving immune. There appeared little hope of devising a method of immunizing cattle by exposing ticks to high temperatures and the experiments were discontinued.

The feeding of a single, infected, adult tick on an adult animal provoked a reaction similar to that produced by larger numbers. In young calves, reared on farms where ticks were controlled, the reactions were comparable to those following infestation with a larger number of infected ticks.

Small numbers of infected nymphs gave variable results in both adults and calves. Failures to transmit have sometimes followed the attachment of 20–86 nymphs fed within 3–4 months of moulting. Sometimes the infection produced had a prolonged incubation period. Usually, however, five or more infected nymphs transmitted a normal, fatal form of East Coast fever to adult cattle.

The experiments suggest an explanation for the atypical outbreaks of East Coast fever that occur in some parts of Kenya Colony.

—J. RICHARD HUDSON.

FOOTE, L. E., FARLEY, H. & GALLAGHER, B. (1951). **The use of aureomycin in anaplasmosis.**—*N. Amer. Vet.* **32**, 547-549. [Abst. from authors' conclusions.] **2047**

Aureomycin hydrochloride, in doses used, initial dose 5 mg. per lb. body weight followed by 2·5 mg. per lb. at 12-hour intervals for five days, was of no value as a therapeutic agent in acute anaplasmosis, but prevented the development of the disease in a susceptible animal.

A cow susceptible to anaplasmosis injected with infected blood, and treated with aureomycin did not develop the disease, but blood tests indicated the presence of the etiologic agent. Aureomycin hydrochloride, used in larger, individual prophylactic doses, might attenuate the etiologic factor so that the blood of the animal given the antibiotic would be anti-

genic. Additional studies on aureomycin hydrochloride, used prophylactically and therapeutically, are needed.

COHRS, P. (1951). Toxoplasmose—Enzephalitis des Hundes. [**Encephalitis in dogs caused by** *Toxoplasma gondii*.]—*Dtsch. tierärztl. Wschr.* **58,** 161-163. **2048**

The clinical and P.M. findings and histology of canine toxoplasmosis are described. A non-purulent focal encephalitis occurs mainly in the cortical zone, distinguishable by the presence of terminal colonies and a peculiar type of softening especially of the granular cells.

—M. L. CLARKE.

FANKHAUSER, R. (1951). Toxoplasmose auch beim Huhn. [*Toxoplasma* **infection in a hen.**]—*Schweiz. Arch. Tierheilk.* **93,** 823-828. [English, French and Italian summaries.] **2049**

Toxoplasma lesions were found in the brain of a hen killed after it had developed symptoms similar to those of fowl paralysis. It is the first case of this kind reported in Switzerland.

—ROY MACK.

FISHER, O. D. (1951). **Toxoplasma infection in English children. A survey with toxoplasmin intradermal antigen.**—*Lancet.* **261,** 904-906. [Author's summary copied *verbatim*.] **2050**

The incidence of toxoplasma infection from previous surveys is briefly reviewed. The preparation of the toxoplasmin antigen and the results of intradermal inoculation are described.

A large-scale survey of children has been made by this method and correlated with serological investigation of toxoplasma antibodies by the dye test and the complement-fixation test. The incidence of infection was found to be insignificant in the earliest age-group (0–4 years), rising to 7% in the third age-group (10–14) and to 17·5% in the adult group (15 years or more).

It is concluded that toxoplasmin reaction is a reliable means of detecting toxoplasma infection in population surveys and as a screening test for suspected clinical cases.

BLANC, G. & BRUNEAU, J. (1950). Préparation d'un sérum animal neutralisant le virus de la toxoplasmose. [**Preparation of an animal serum neutralizing toxoplasma.**]—*Bull. Acad. Méd., Paris.* **134,** 240-244. **2051**

Inoculation of a strain of *Toxoplasma* obtained from rodents into a dromedary, a sheep and a goat gave sera which neutralized the infective organism, as shown by intradermal inoculation of rabbits with mixtures of serum and *Toxoplasma*.—E. G. WHITE.

See also abst. **2310** (report, India).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

PYL, G. & KESTING, F. (1948). Versuche zur Isolierung des komplementbindenden Antigens des Maul- und Klauenseuchevirus sowie des Virus selbst. [**Attempted isolation of complement-fixing antigen and of the virus of foot and mouth disease.**]—*Zbl. Bakt. I.* (*Orig.*) **152,** 378-380. **2052**

The complement-fixation antigen of F. & M. virus which has the properties of a globulin, may be improved by chemical means. The authors described the preparation of an antigen with a protein content of 1·3% and a titre of 1:16. After being adsorbed on $Al(OH)_3$ and centrifuged a solution containing 0·4% protein and a titre of 1:16 was obtained. This solution was dialyzed and centrifuged and the isolated precipitate was freeze-dried. A 1% solution of this substance in physiological saline had a titre of 1:512.—E.M.J.

HOBOHM, K. O. & PETERMANN, H. (1949). Concentracion y demonstracion del antigeno fijador del complemento en la vacuna antiaftosa tipo Riems. [**Complement-fixing antigens in foot and mouth disease vaccines.**]—*Gac. vet., B. Aires.* **11,** 56-63. [English and German summaries.] **2053**

The authors have applied a method similar to that used by Pyl & Kesting [see preceding abst.] for concentration of the complement-fixing antigen from vesicle fluid and epithelial suspensions.

The vaccine in quantities of 50–200 ml. is centrifuged and the sediment is shaken with a saturated solution of $Na_2HPO_4 . 2H_2O$ at pH 8·3, using about 40 ml. for each 100 ml. of vaccine. This mixture is then cleared by centrifugation and the supernatant liquid dialysed against distilled water. The solution is then concentrated under reduced pressure to a volume of 4% of the original vaccine, when the phosphate concentration should lie between M/6 and M/15. It is important that this antigen should be checked for anti-complementary properties. If present they can usually be eliminated by heating at 58°C. for 30 min.

Antigens prepared in this way from Schmidt-Waldmann vaccines gave type-specific fixation corresponding to the viruses incorporated in the vaccine. The authors have drawn attention to the difficulty of correlating c.f. titres of vaccines with protective power, owing to the large scale experiments necessary to determine the latter property.—J. B. Brooksby.

Serra, A. & Guarini, G. (1951). Sulla possibilità di dimostrare la presenza di anticorpi devianti nel siero iperimmune antiaftoso. **[Demonstration of antibodies in hyperimmune foot and mouth disease serum.]**—*Clin. vet., Milano.* **84,** 321-330. [English and French summaries. Abst. from English summary.] **2054**

The authors examined the complement-fixing antibodies in F. & M. disease antiserum using 1·5% sodium chloride as a diluent, working with the serum of 30 hyperimmune cattle and with different samples of commercial serum, which were available. They stated that the test gave a good indication of the potency of the antiserum, and that it could also be used for typing.

Wegman, M. E. (1950). **Recent advances in rabies.**—*Pediatrics.* **6,** 785-788. **2055**

The following topics were discussed: active immunization; mouse potency test; ultra-violet irradiated vaccine; chick embryo vaccine (Flury strain); the paralysis-producing factor; passive immunization; mass vaccination of dogs; use of hyperimmune serum in human beings; and ecological studies.—W. R. Bett.

Kalter, S. S., Smolin, H. J., McElhaney, J. M. & Tepperman, J. (1951). **Endocrines and their relation to influenza virus infection.**—*J. exp. Med.* **93,** 529-538. [Authors' summary copied *verbatim.*] **2056**

Treatment with testosterone increases proliferation of influenza virus as well as protein anabolism. A relative lack of testosterone caused by castration is associated with a diminished rate of virus growth. When protein catabolism is increased by ACTH or cortisone, the rate of virus proliferation decreases. These results suggest the existence of a correlation between alterations of protein metabolism and virus proliferation.

Ackermann, W. W. (1951). **The relation of the Krebs cycle to viral synthesis. II. The effect of sodium fluoroacetate on the propagation of influenza virus in mice.**—*J. exp. Med.* **93,** 635-642. [Author's summary copied *verbatim.*] **2057**

A further study has been made of the relationship of reactions of the Krebs cycle to the propagation of influenza virus. By the administration of sublethal doses of sodium fluoroacetate which were found to increase the concentration of citrate in the mouse lung, it was possible to demonstrate a blocking of the citrate acid cycle in that organ. Further, the intraperitoneal administration of these concentrations of fluoroacetate was found to inhibit markedly the propagation of influenza, Type A, virus in the lungs of mice. The inhibition was observed when the fluoroacetate was administered 15 minutes, 6 hours, or 12 hours after the mice were inoculated with virus. This effect was also demonstrable when the concentration of the viral inoculum was varied over a range of virus titers from $10^{3\cdot5}$ to $10^{6\cdot5}$. Sodium fluoroacetate was found to have no effect *in vitro* on the infectivity or hemagglutinating property of the virus. The significance of these findings with regard to chemotherapy and to the mechanism of viral synthesis is described.

Ginsberg, H. S. & Horsfall, F. L., Jr. (1952). **Quantitative aspects of the multiplication of influenza A virus in the mouse lung. Relation between the degree of viral multiplication and the extent of pneumonia.**—*J. exp. Med.* **95,** 135-145. [Abst. from authors' summary.] **2058**

Influenza A virus, PR8 strain, increases in amount in the infected mouse lung at a relatively constant rate. When more than 25 M.S.50 [50% maximum score end point] doses of virus is inoculated, the rate of multiplication appears to be independent of the amount of virus introduced, about 1,100-fold increase per day. The rate of increase in the pulmonary lesions induced by infection of the mouse lung with PR8 also appears to be relatively constant and independent of the amount of virus inoculated, about 8·5-fold increase per day.

Harford, C. G. & Hamlin, A. (1952). **Effect of influenza virus on cilia and epithelial cells in the bronchi of mice.**—*J. exp. Med.* **95,** 173-190. [Authors' summary modified.] **2059**

In order to determine the effect of infection with influenza virus on bronchial cilia of the mouse, ciliary beat was visualized directly by microscopic examination of the bronchi in slices of fresh lung. Cilia were shown also in sections of fixed tissue by the use of special silver staining methods. The results revealed persistence of the cilia in spite of severe viral infection and indicated that the lowered resistance to secondary pneumococcal infection which occurs in influenzal pneumonia of the mouse is not due to interference with the ciliary mechanism. By a process of exclusion, the findings gave further

support to the theory that lowered resistance to pneumococcal infection in influenzal pneumonia is due to oedema fluid in the viral lesion furnishing a culture medium for inhaled pneumococci.

A widely used method for evaluation of ciliary activity on respiratory epithelia has been the microscopic observation of wave-like movements in reflected light. This activity was observed readily in the bronchi of mice, but evidence was obtained showing that at this site it was due to something other than ciliary beat.

Further histopathological observations were made in order to define the lesion of the bronchial epithelium that would permit sparing of ciliated cells. The evidence obtained favours the theory that the viral infection does not destroy any of the cells of the bronchial epithelium. Inclusion bodies were found in the cytoplasm, making it seem likely instead that viral particles grow in colony-like aggregations and that liberation of virus into the lumen takes place not only by simple extrusion of inclusions but also by detachment of inclusion-laden globular portions of the cytoplasm.

PERLMANN, G. T., TAMM, I. & HORSFALL, F. L., JR. (1952). **An electrophoretic examination of a urinary mucoprotein which reacts with various viruses.**—*J. exp. Med.* **95**, 99-104. [Authors' summary copied *verbatim.*] 2060

A mucoprotein isolated from human urine and possessing the capacity to react with a number of viruses is electrophoretically homogeneous at pH 6·8 and 8·6. After treatment with influenza virus and elimination of its biological activity, the substance remains homogeneous and its electro-phoretic mobility is decreased by approximately 20%.

MACDONALD, A. (1951). **Complement-fixation tests in the diagnosis of contagious pustular dermatitis infection in man.**—*J. Path. Bact.* **63**, 758-761. [Author's summary copied *verbatim.*] 2061

Complement-fixation tests were carried out in 20 human cases of suspected infection with the virus of contagious pustular dermatitis (C.P.D.). The antigen for these tests was made from material obtained by infecting sheep with a strain of the virus first isolated from a human lesion. Nine of the 20 cases gave positive tests in low dilutions of serum. With the complement-fixation reaction there was no evidence of serological relationship between the viruses of C.P.D. and vaccinia.

SULKIN, S. E. & PIKE, R. M. (1949). **Viral infections contracted in the laboratory.**—*New Engl. J. Med.* **241**, 205-213. 2062

A summary was presented of 222 laboratory infections caused by viruses; 21 were fatal. Over two-thirds of the cases were due to the viruses of psittacosis, yellow fever, Rift Valley fever, lymphocytic choriomeningitis, and Venezuelan equine encephalomyelitis.—W. R. BETT.

HAMMON, W. McD., REEVES, W. C. & SATHER, G. E. (1951). **Western equine and St. Louis encephalitis viruses in the blood of experimentally infected wild birds and epidemiological implications of findings.**—*J. Immunol.* **67**, 357-367. [Authors' summary copied *verbatim.*] 2063

Several species of wild birds from Kern County, California were inoculated subcutaneously with high dilutions of western equine and St. Louis viruses. This frequently resulted in readily detectable viremia beginning within 24 hours after inoculation. With the western equine virus, viremia attained titers up to 10^{-6} and lasted 3 to 4 days. Antibody developed within 15 to 29 days following inoculation in all those adequately tested. Birds inoculated with St. Louis virus developed much lower titers of viremia, usually detectable only in the undiluted and the 10^{-1} dilution and only once detected at a level of 10^{-4}. These titers are comparable to those found previously in domestic fowls, and mosquitoes had become infected in repeated instances following feedings made on these fowl. The inoculated birds in these experiments did not always develop neutralizing antibodies during the interval which had proved adequate for the western equine virus. One bird with demonstrated viremia had failed to develop detectable antibodies 30 days after inoculation. It is concluded from these experiments and other observations that in Kern County, California wild birds are as important as and probably more important than domestic fowl as sources of virus infection for mosquitoes.

AINSLIE, J. D., FRANCIS, T., JR. & BROWN, G. C. (1951). **ACTH in experimental poliomyelitis in monkeys and mice**—*J. Lab. clin Med.* **38**, 344-358. [Authors' summary copied *verbatim.*] 2064

In each of two experiments ACTH was given in doses of 25 mg. every six hours to twelve rhesus monkeys for three days before intracerebral inoculation of the Minnesota strain of poliomyelitis virus, and continued in 6 of the animals until the onset of paralysis. Six controls in each experiment received virus, but no hormone. A physiologic response was obtained with the hormone as shown by the precipitous drop and subsequent low level in the number of circulating eosinophils, and by the increased excretion of 17-ketosteroids in the urine but not

by any changes in the fasting blood sugar values, or glucose tolerance curves. All twenty-four monkeys treated with ACTH, and ten of twelve controls, developed poliomyelitis. In four of twelve monkeys receiving continuous treatment paralysis occurred on the fifth day, two or three days earlier than the first paralysis in the twelve controls. Paralysis occurred 0·6 or 2·6 days earlier in the groups on continuous treatment than in the controls, and 0·0 or 1·0 day earlier in the groups treated only before inoculation with the virus. This suggests that the administration of ACTH not only fails to induce increased resistance to the virus, but appears to render the host slightly more susceptible.

In these experiments a significant drop in circulating eosinophils was noted to follow the inoculation of the virus suspensions in rhesus monkeys which did not receive ACTH. In a third control experiment with cynomolgus monkeys, the inoculation of infected spinal cord by either the intracerebral or subcutaneous routes also resulted in a similar decrease, while the inoculation of a suspension of normal cord did not have this effect. However, the decrease after inoculation of infected material was of lesser magnitude and shorter duration than that resulting from treatment with ACTH.

Foster, C., Sigel, M. M., Henle, W. & Stokes, J., Jr. (1951). **The influence of ACTH on the resistance of monkeys to the Yale SK strain of poliomyelitis virus.**—*J. Lab. clin. Med.* **38**, 359-362. [Authors' summary copied *verbatim*.] **2065**

ACTH induces a decrease in eosinophils in the monkey. The change in counts is often irregular but a significant depression can be maintained with adequate dosage. In most instances, the counts in the ACTH-treated animals were at their lowest on the day of onset of paralysis or immediately preceding it. Those animals in the control series which became paralyzed or showed histopathologic evidence of poliomyelitis also had a significant depression of eosinophils in the majority of their daily counts. Whereas in the ACTH group six of seven monkeys became paralyzed, only two of six developed paralysis in the control group.

The results, although not conclusive, lend some support to the belief that the adrenal [gland] may play an important role in respect to paralysis in poliomyelitis infection.

Polson, A., Dent, J., Lawrence, S. M. & van Rooy, P. J. (1951). **An improved diluent for the production of African horse-sickness virus vaccine.** [Correspondence.]—*Nature, Lond.* **168**, 655-656. **2066**

On the basis of persistence of virus titre the authors consider 10% egg-white in M/50 phosphate buffer pH 7·5 to be the diluent of choice for African horse-sickness virus vaccine.

—C. A. E. Briggs.

Hudson, J. R. (1950). **The control of rinderpest.** [Correspondence.]—*Brit. vet. J.* **106**, 34-36. **2067**

This is a reply to a previous article [Edwards, J. T. *V.B.* **20**, 2273] on the use of caprinized virus in rinderpest control and is based on the author's 20 years experience of the work.—E. J. H. Ford.

Cilli, V. (1949). Osservazioni sul comportamento delle capre Eritree nei confronti del virus K.A.G. (Kabete attenuated goat) della peste bovina. **[Reaction of Eritrean goats to Kabete attenuated goat virus against rinderpest.]**—*Atti. Soc. ital. Sci. vet.* **3**, pp. 467-473. [English and French summaries.] **2068**

Reactions in Eritrean goats after vaccination with K.A.G. virus against rinderpest and the distribution of the virus in the goats were described. Precautions to be taken when using K.A.G. vaccine were suggested. [See also *V.B.* **22**, 1327.]—L. Badiali.

Datta, S., Seetharaman, C. & Rajagopalan, V. R. (1951). **The use of lapinised rinderpest vaccine (Nakamura III) in India—a preliminary report.**—*Indian vet. J.* **28**, 1-12. **2069**

The 795th passage of lapinized rinderpest virus Nakamura III obtained from the National Research Bureau of Animal Industry, Nanking, was found to maintain its antigenic properties after 170 further passages in rabbits carried out at the Indian Veterinary Research Station. So far 841 cattle including some cows in milk, 29 buffaloes, 108 goats and 186 sheep have been immunized with this strain and in all these species nothing more than a very mild thermal reaction was observed, and there was no adverse effect on milk yield and general health. The immunity conferred was solid up to 15 months, the maximum period tested so far.

—M. R. Dhanda.

Mir Chamsy, H. (1951). Contribution à l'étude des vaccins modernes contre la peste bovine en Iran. **[The use of modern vaccines in control of rinderpest in Persia.]**—*Thesis, Alfort.* pp. 96. [Mimeographed.] **2070**

The manner in which a serious invasion of Persia which occurred in 1949 was eradicated is described. A formolized vaccine containing saponin was prepared from spleen, lymph node,

thymus, thyroid and lung tissues; some 10,000 doses a day were produced under the direction of Dr. Delpy. The history of the development of inactivated rinderpest vaccine is summarized. Good historical accounts are given of the goat-adapted, rabbit-adapted and egg-adapted viruses and their use as immunizing agents. Personal experiences mainly on a laboratory scale with the goat-adapted and the rabbit-adapted viruses are described. The goat-adapted virus produced severe reactions in the highly susceptible Persian cattle and was not acceptable to the cattle owners. The rabbit-adapted virus caused mild reactions, but for its widespread use a large supply of rabbits and refrigeration facilities are necessary.—M.C.

JENNINGS, A. R. & GLOVER, R. E. (1952). **Enzootic pneumonia in calves. II. The experimental disease**—*J. comp. Path.* 62, 6-22. [Authors' summary copied *verbatim.*] 2071

A transmissible disease of calves which produces an inflammation of the turbinates and a low grade pneumonia has been set up by the inoculation of unfiltered and filtered material. The disease is characterised by an early febrile reaction followed by diarrhoea and pneumonia. It is exacerbated by chilling the animals. The virus is present in the blood during the fever and when inoculated intravenously induces a pneumonia. Attempts to establish the agent in small animals and in the developing egg have so far been unsuccessful.

HOSOYA, H., MATUMOTO, M. & IWASA, S. (1950). **Epizootiological studies on stillbirth of swine occurred in Japan during summer months of 1948.**—*Jap. J. exp. Med.* 20, 587-595. [In English. Abst. from authors' summary.] 2072

Epidemiological study was performed on the outbreak of stillbirths of swine which occurred in the summer of 1948. The data supports the theory that Japanese B virus is the cause of the disease.

Of 131 deliveries investigated, 56·5% were stillbirths.

The disease was prevalent during August and September coinciding with the epidemic of Japanese B encephalitis among human beings and horses.

There is a difference in incidence according to the number of previous pregnancies of maternal sows, suggesting some grade of immunity as a result of inapparent infections with the virus of Japanese B encephalitis.

The average duration of the gestation period was 115·5 days.

Symptoms were very slight or absent in the dams.

Serological survey of normal human beings and domestic animals including pigs indicated dissemination of the virus of Japanese B encephalitis in these districts. [See also *V.B.* 21, 2579-2581.]

SCANLON, E. J. & FISHER, G. W. (1951). **Preliminary report on the field use of avianized distemper virus in 100 dogs.**—*Vet. Med.* 46, 432-434. [Authors' summary and conclusions modified.] 2073

One hundred previously unvaccinated dogs which were susceptible to distemper were vaccinated with avianized distemper virus. Animals selected were representative of the usual cross-section seen in everyday small animal practice, whether or not in good nutritional state or free from parasites. However, visibly sick dogs were not vaccinated.

No undesirable post-vaccination reactions were encountered in any case. Slight febrile reactions of short duration may be encountered within the first week after vaccination, but many are missed unless temperatures are read four times daily. Twenty-six per cent of the dogs had post-vaccination exposure to clinical distemper cases or in distemper wards; 8% were exposed to typical hard pad disease without developing symptoms during a prolonged observation period and an additional 15% were maintained under conditions which, by past experience, were particularly favourable for transmission. Not a single break is known to have occurred.

The authors concluded that the chick embryo-adapted virus of canine distemper is a safe, effective product for the immunization of unexposed dogs. Some evidence was presented to show that, with the establishment of immunity against distemper, they are also refractory to so-called hard pad disease.

FREUDIGER, U. (1951). Zwei Fälle von Hepatitis contagiosa canis (Rubarth) aus dem Einzugsgebiet von Bern. **[Two cases of contagious canine hepatitis in the district of Berne.]**—*Schweiz. Arch. Tierheilk.* 93, 404-410. [English, French and Italian summaries.] 2074

Macroscopic and histological lesions of contagious canine hepatitis were found in a five-week-old puppy and a nine-month-old dog. In the liver, spleen and kidneys of the puppy, [unidentified] pleomorphic Gram-positive rods, pathogenic for mice, were reported to be present.—E. COTCHIN.

BRUNNER, K. T., SCHEITLIN, M. & STÜNZI, H. (1951). Zum serologischen Nachweis der Hepatitis contagiosa canis. Zugleich Untersuchungen über die Frequenz der Leptospirosen beim Hund. **[Serological demonstration of contagious canine hepatitis.]**—*Schweiz. Arch. Tierheilk.* **93**, 443-458. [English, French and Italian summaries.] **2075**

Of 300 dogs (some of which were healthy, and some undergoing treatment for various conditions), 136, varying in age from six months to 14 years, had in their sera complement-fixing antibodies against the virus of contagious canine hepatitis. In this series, 15 of 20 dogs with chronic eczema had antibodies. Of 302 canine sera tested 103 contained leptospiral agglutinins; 54 of the positive sera also had complement-fixing antibodies to contagious canine hepatitis. Fifty of the 136 sera with complement-fixing antibodies against contagious canine hepatitis also had leptospiral agglutinins.—E. COTCHIN.

SOUTHAM, C. M. & BABCOCK, V. I. (1951). **Effect of cortisone, related hormones, and adrenalectomy on susceptibility of mice to virus infections.**—*Proc. Soc. exp. Biol., N.Y.* **78**, 105-109 [Authors' summary copied *verbatim.*] **2076**

Large doses of cortisone greatly increased the susceptibility of mice to lethal infection by West Nile, Ilheus, and Bunyamwera viruses. ACTH in massive dosage produced the same effect with West Nile virus. Desoxycorticosterone, testosterone, progesterone, and estradiol in massive doses had no significant effect on these virus infections in mice. Anopheles B virus was not infective by intraperitoneal route even in cortisone treated mice. Adrenalectomy did not influence susceptibility to virus infection. The possible mechanisms of the cortisone effect are discussed and it is concluded that the effect of cortisone upon virus infection is probably due to a direct effect of cortisone upon the host.

TAMM, I. & HORSFALL, F. L., JR. (1952). **A mucoprotein derived from human urine which reacts with influenza, mumps, and Newcastle disease viruses.**—*J. exp. Med.* **95**, 71-97. [Abst. from authors' summary.] **2077**

The biological, chemical, and physico-chemical properties of a mucoprotein, present in human urine, and obtained in a pure state were studied. It had a high molecular weight, *i.e.*, $7{\cdot}0 \times 10^6$, consisted of thread-like molecules which have axial ratios of approximately 100, and was specifically antigenic. It possessed a marked capacity to react with influenza, mumps, and Newcastle disease viruses. At equilibrium, with influenza virus, the minimal amount of the substance capable of giving a demonstrable reaction with one hemagglutinating unit of virus was about $0{\cdot}0003\mu g$. The mucoprotein was altered by preparations of influenza viruses and its capacity to react with these agents or others was lost. The kinetics of this inactivation process was in accord with those of well-known enzyme-substrate systems. With the exception of the capacity to react to viruses, altered mucoprotein did not differ from the native substance relative to any of the properties examined in the present study but it was afterwards found that certain physico-chemical properties of the altered mucoprotein were different from those of the native substance.

BONADUCE, A. (1950). Ricerche sull'influenza della vitamina a nell'evoluzione della pseudopeste aviare. **[Vitamin A and Newcastle disease.]**—*Clin. vet., Milano.* **73**, 39-48. **2078**

A study of the influence of vitamin A on Newcastle disease. Vitamin A had no effect on the disease. No new material.

—LIVIO BADIALI.

I. & II. MITCHELL, C. A. & WALKER, R. V. L. (1951). **Studies in Newcastle disease. II. Inactivated virus and adjuvant used as vaccine. III. Production of a hyperimmune serum in a horse.**—*Canad. J. comp. Med.* **15**, 219-222 & 223-225. **2079**

I. Formalin-inactivated vaccines were prepared from two strains of N.D. virus. These were emulsified in falba and mineral oil. Doses of 0·5 and 1·0 ml. were injected intramuscularly into four groups of five fowls. Haemagglutination-inhibition tests were made at monthly intervals. Birds were challenged at three and six months. One bird did not have neutralizing antibodies and died following challenge. Nineteen possessed antibodies and were solidly immune. The results indicated that the vaccine produced a considerable degree of resistance which lasted for at least six months.

II. One large dose of harvested egg fluids was given by the intravenous route, followed by small doses, at first by the same route and then subcutaneously. Neutralizing antibodies were demonstrated by the fifth week, and on the 49th day and after the serum protected embryos against invasion in all dilutions. Haemagglutination-inhibiting antibodies were not produced. The serum protected chickens against 0·5 ml. of virus in a concentration of 10^{-2}.

—R. GWATKIN.

COLE, R. K. & HUTT, F. B. (1951). **Evidence that eggs do not transmit leucosis.**—*Poult. Sci.* **30,** 205-212. **2080**

Chicks from a strain susceptible to leucosis were held for 18–20 hours after hatching in the incubator. They were divided into two lots, one lot being exposed to infection during rearing and the other reared in isolation. In the exposed lot deaths from leucosis averaged 54·0% in 1948 and 63·8% in 1949. The corresponding figures for the lots reared in isolation were 9·4% and 5·8% respectively.—D. LUKE.

HUTT, F. B. (1951). **The control of leucosis in the fowl.**—*World's Poult. Sci. J.* **7,** 16-25. **2081**

H. reviewed the various methods for the control of this disease. He advocated breeding for resistance in order to produce a stock which can withstand ordinary field exposure to the disease.—D. LUKE.

DE BOER, E. & DJAENOEDIN, R. (1951). Neurolymphomatosis gallinarum in Indonesië. **[Fowl paralysis in Indonesia.]**—*Hemera Zoa.* **58,** 121-135. [English, French and Indonesian summaries.] **2082**

Fowl paralysis was diagnosed for the first time in Indonesia in fowls of four breeds. The origin was not established with certainty. Large-scale importation had been made after the end of the second world war.

—C. A. VAN DORSSEN.

WINTON, B., LUCAS, E. H. & COTTRAL, G. E. (1950). **The effects of feeding tomatoes on the incidence of lymphomatosis in chickens.** —*Poult. Sci.* **29,** 912-915. **2083**

Experiments with White Leghorn chickens failed to confirm suggestions that supplementing the diet with tomatoes protected against lymphomatosis.—N. DEAN.

WHITEHEAD, H. R., HUNTER, G. J. E. & COX, G. A. (1952). **Inhibition of bacterial growth by bacteriophage as distinct from lytic action.** —*J. gen. Microbiol.* **6,** 21-29. [Authors' summary copied *verbatim.*] **2084**

Certain races of streptococcal phage with a normal lytic action on some strains of streptococci were found to be absorbed on, and to inhibit the growth of, other strains, without the occurrence of lysis or multiplication of the phage. One race of phage inhibited the growth of several streptococcal strains which had hitherto been considered unrelated to one another on the basis of their reactions to lytic phages. Cultures which recovered from temporary inhibition by phage contained variants which were resistant both to inhibition and to lysis by phages which attacked the original strain. This resistance is, however, short-lived as compared with the resistance of variants obtained through the action of a lytic phage.

BEDSON, S. P. [Prof. of Bacteriology, London Hospital.] DOWNIE, A. W. [Prof of Bacteriology, University of Liverpool.] MACCALLUM, F. O. [Director Virus Laboratory, Central Public Health Laboratory.] & STUART-HARRIS, C. H. [Prof. of Medicine, University of Sheffield.] (1950). **Virus and rickettsial diseases.** pp. viii + 383. London: Edward Arnold & Co. 24s. **2085**

The object of this book has been to bridge the gap between the research worker and the practitioner, and to give a coherent and readable account of the many advances in our knowledge which have been made in recent years. It treats of the virus and rickettsial diseases of man with a short chapter on animal viruses which affect man.

There is, however, much of interest and value to the veterinarian, particularly the chapters dealing with immunity, natural history of virus diseases, and chemotherapy.

There is a chapter on bacteriophage and an appendix dealing with laboratory diagnosis of virus diseases. Each chapter has a selected list of recent references.—M.C.

WELSH, H. H., LENNETTE, E. H., ABINANTI, F. R. & WINN, J. F. (1951). **Q fever in California. IV. Occurrence of *Coxiella burnetii* in the placenta of naturally infected sheep.**—*Publ. Hlth Rep., Wash.* **66,** 1473-1477. **2086**

Of 72 placentas examined by g. pig or hamster inoculation, 21 gave positive reactions to *Rickettsia burneti* antigen in the complement-fixation test. Of 43 serologically positive and 29 serologically negative sheep, the placentas of 15 and 6 respectively were infected with *R. burneti.*—IAN DAVIDSON.

CLARK, W. H., LENNETTE, E. H. & ROMER, M. S. (1951). **Q fever in California. XI. An epidemiologic summary of 350 cases occurring in northern California during 1948-1949.**—*Amer. J. Hyg.* **54,** 319-330. [Authors' summary slightly modified.] **2087**

Certain of the epidemiological characteristics are described for 350 cases of Q fever occurring in Northern California during 1948-49. The disease has been most commonly recognized among males of working age, and among persons in contact with domestic livestock. Considerable evidence, both indirect and direct, points

to a dissemination of the causal agent through contamination of the environment and the atmosphere. Further studies are needed to clarify the exact route(s) and mode(s) of transmission of the infection to man.

GIROUD, P. & JADIN, J. (1950). Comparaison entre différents tests pour le diagnostic de la Fièvre Q, réactions allergiques, fixation du complément et agglutination des rickettsies. **[Diagnostic tests in Q fever.]**—*C. R. Acad. Sci., Paris.* **230,** 2347-2348. **2088**

The authors carried out comparative diagnostic tests for Q fever on human beings in a district of Ruanda-Urundi (Belgian Congo) where the human population live in straw huts in close contact with their flocks and herds, and where there had been an epidemic in 1949. Using the slide agglutination tests, eight out of 18 individuals gave a positive reaction in titres of 1:320 or 1:640. The complement-fixation test yielded five positive reactions out of 15. Using the hypersensitivity test (intracutaneous inoculation of 0·1 ml. of antigen into the forearm), 11 out of 16 individuals gave a positive reaction (diameter 40–50 mm., skin fold 10–12 mm.). This latter test was inaccurate in markedly thin or old subjects.—F.E.W.

GIROUD, P. & JADIN, J. (1950). Comportement sérologique des animaux domestiques vis-à-vis des antigènes rickettsiens, en milieu contamine de fièvre Q. **[Serological reaction of domestic animals from a Q fever area to rickettsial antigens.]**—*C.R. Acad. Sci., Paris.* **231,** 86-87. **2089**

Following earlier findings in human beings living in close contact with their flocks and herds [See preceeding abst.,] in a district of Ruanda-Urundi, the authors carried out agglutination tests on fresh serum from the blood of adult cattle, horses, sheep, goats, pigs and dogs in the same district. Microscopic readings were recorded after desiccation and Giemsa staining. All of the 12 goats tested gave positive reactions (titres 1:160–1:640); positive reactions were obtained from 13 out of 16 cattle, six out of 10 dogs, five out of 10 horses, five out of 11 sheep and five out of 17 pigs. All the animals were severely parasitized, especially by ticks.

—F.E.W.

GIROUD, P. & LE GAC, P. (1950). Comportement des chasseurs de rongeurs en Oubanghi-Chari (Afrique équatoriale française) vis-à-vis des cinq antigenes rickettsiens majeurs: Antigenes épidémique, murin, boutonneux, fièvre Q, Fluviale du Japon. **[Rickettsial infections in French Equatorial Africa.]**—*C. R. Acad. Sci., Paris.* **230,** 1987-1988. **2090**

Intra-dermo-reactions in 58 Africans in Oubangui-Chari who had taken an active or indirect part in the rodent hunting (which takes place for four or five months of every year in the bush-covered savannahs of tropical Africa, and which culminates in the cooking and eating of the prey), yielded 49 positive reactions to the murine typhus antigen; 42 positive to exanthematic typhus antigen; eight positive to epidemic typhus antigen and ten positive to Q fever antigen. Reactions to the antigen of the Japanese river typhus (Fluviale) were negative.

—F.E.W.

GIROUD, P., LE GAC, P., ROUBY, M., LEGARDE, J. & GAILLARD, J.-A. (1951). Contribution à létude des rickettsioses en Oubangui-Chari consécutives au feu de brousse; quatre nouveaux cas à Bangui, Cas cliniques, comportement sérologique, isolement des souches. Résultats spectaculaires des antibiotiques. **[Rickettsia infection in Oubangui-Chari. Q Fever.]**—*Bull. Soc. Path. exot.* **44,** 571-579. **2091**

Detailed case reports of four cases of Q fever in human beings are given. Methods of diagnosis are outlined. Satisfactory therapeutic results followed the administration of aureomycin. [See also preceding abst.]—D. LUKE.

ORMSBEE, R. A., LACKMAN, D. B. & PICKENS, E. G. (1951). **Relationships among complement-fixing values, infectious endpoints, and death curves in experimental** *Coxiella burnetii* **infection.** — *J. Immunol.* **67,** 257-264. [Authors' summary modified.] **2092**

Under certain conditions, the time necessary for 50% of the chick embryos infected with *Rickettsia burneti* to die varies inversely and in a regular manner with the log of the complement-fixing value of the inoculum. The number of infectious doses of *R. burneti* in a suspension, as titrated in chick embryos and confirmed in g. pigs, varies directly with the complement-fixing value of the inoculum. Under certain conditions a predictable relationship exists with *R. burneti* between complement-fixing power, number of infectious doses, and the 50% death point in chick embryos.

See also absts. **2142** (cultivation of venereal tumour virus in chick embryos); **2308-2313** (reports, India).

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GIOLITTI, G. (1950). Aminoacidi e formazione di anticorpi. **[Amino acids and the formation of antibodies.]**—*Atti Soc. ital. Sci. vet.* **4,** 261-265. [English and French summaries.] **2093**

The agglutination titre was determined in two groups of rabbits, immunized with dead culture of *Salmonella cholerae-suis* and inoculated with a mixture of amino-acids (composition not stated) by subcutaneous and intraperitoneal route respectively. In comparison with controls the agglutination level in the rabbits inoculated intraperitoneally increased moderately up to 15 days and then declined; in the rabbits inoculated subcutaneously the volume trebled after 15 days and was very much higher after 25 days.—K. J. SINCLAIR.

GRAUSGRUBER, W. (1951). Die Herstellung präzipitierender Antisera mit durch Aluminiumhydroxyd verstärkten Antigenen. **[Production of precipitating antisera with antigens treated with $Al(OH)_3$.]**—*Wien. tierärztl. Mschr.* **38,** 717-725. **2094**

Antigens treated with aluminium hydroxide produce in rabbits precipitating antisera of much greater value and potency than those normally produced.—F. R. HARRIS.

TALMAGE, D. W., DIXON, F. J., BUKANTZ, S. C. & DAMMIN, G. J. (1951). **Antigen elimination from the blood as an early manifestation of the immune response.**—*J. Immunol.* **67,** 243-255. [Authors' summary copied *verbatim.*] **2095**

The elimination from the blood of I^{131} labelled bovine gamma globulin has been followed in 75 rabbits under nine different experimental conditions, and the rate of elimination of this antigen has been found to be an early and sensitive manifestation of the immune response.

KRAKOWER, C. A. & GREENSPON, S. A. (1951). **localization of the nephrotoxic antigen within the isolated renal glomerulus.**—*Arch. Path.* **51,** 629-639. [Authors' summary copied *verbatim.*] **2096**

Isolated renal glomeruli were sonically vibrated, yielding at low voltage isolated cells, predominantly of visceral epithelial origin. At high voltage, three fractions were obtained: a low speed centrifugate made up of clear, refractile plates of parietal capsule and basement membrane, optically free of cells; a high speed centrifugate and supernatant representing most of the components of all the cells of the glomerulus. By studying the antigenicity of whole glomeruli and low speed centrifugates with a high or low percentage of parietal capsules, it could be clearly shown that the parietal capsules were not antigenic. Isolated cells and all the cells of the glomerulus had approximately the same degree of antigenicity, yet with a sufficient degree of difference probably to exclude the parietal epithelial cells as bearers of antigen. By virtue of the distribution of desoxypentose and pentosenucleic acids in the high voltage fractions and isolated cells, nuclei and cytoplasmic nucleoproteins could be eliminated as nephrotoxic antigens. Basement membrane was found to be 20 times more active antigenically than the combined visceral epithelial and endothelial cells of the glomerulus in terms of wet weight and 50 times more active on the basis of nitrogen content. Because of the inability to recognize morphologically or separate experimentally cellular cytoplasmic films which might be adherent to the basement membrane, the view is held that the nephrotoxic antigen is distributed throughout the basement membrane and that surface antigens are released when visceral epithelial or endothelial cells or both cell layers are shorn away.

DUTHIE, E. S. & LORENZ, L. L. (1952). **Staphylococcal coagulase: mode of action and antigenicity.** — *J. gen. Microbiol.* **6,** 95-107. [Authors' summary copied *verbatim.*] **2097**

Different strains of staphylococci vary in ability to produce free coagulase. Methods are given for the selection of suitable strains and for the production and concentration of coagulase from one of them. Of animal plasmas examined, cow, sheep, dog, guinea-pig and mouse showed a relative deficiency in coagulase activator, while plasma of man, monkey, horse, cat, pig, fowl and rabbit contained the most.

Coagulase activator resembles prothrombin closely in physical properties such as thermolability, behaviour during salting out and removal by adsorbents. They are both partly lost in blood clotting and in dicumarol poisoning, but while prothrombin is apparently removed from plasma by repeated Seitz filtration there is no loss of activator. The question of probable identity is discussed.

Antibody to coagulase is present in the sera of many normal individuals and in those suffering from chronic staphylococcal infections. The intramuscular injection of coagulase adsorbed on aluminium phosphate produces similar antibodies in the sera of rabbits.

BEIJERS, J. A., VAN LOGHEM, J. J. & BORSTEL, H. (1951). Haemolytische anaemie bij het pasgeboren veulen (Erythroblastosis foetalis). **[Haemolytic anaemia (Erythroblastosis foetalis) in the new-born foal.]**—*Tijdschr. Diergeneesk.* **76**, 711. **2098**

Haemolytic anaemia was diagnosed in a four-day-old [Shetland] pony foal. The bilirubin content of the serum was 186 mg. per l., red cells 7,240,000, white cells 13,500. Direct Coombs test of the foal was positive. Indirect Coombs test with plasma of the dam was positive. There were no agglutinins in the colostrum of the dam or in the urine of the foal. The foal died during blood transfusion.

—C. A. VAN DORSSEN.

BRAMBELL, F. W. R., HEMMINGS, W. A., HENDERSON, M., PARRY, H. J. & ROWLANDS, W. T. (1949). **The route of antibodies passing from the maternal to the foetal circulation in rabbits.**—*Proc. roy. Soc.* Ser. B. **136**, 131-144. [Authors' summary copied *verbatim.*] **2099**

It has long been known that maternal circulating antibodies pass into the foetal blood in rabbits during the latter half of pregnancy. The allanto-chorionic placenta has been assumed to be the site of this transference, the number of tissues separating the two blood streams being reduced to a minimum in rabbits at these stages. It was shown in a recent paper that, at a stage before the establishment of the embryonic circulation, maternal circulating antibodies pass the bilaminar omphalopleur into the yolk-sac cavity. It is shown in this paper that in 24-day embryos antibodies pass from the maternal circulation by way of the uterine lumen and the yolk-sac splanchnopleur into the foetal vitelline circulation, and do not pass by way of the allanto-chorionic placenta. The method employed involved injection of immune rabbit serum either into the uterine lumen or the maternal blood and interruption of the foetal vitelline circulation of some of the embryos by ligaturing the yolk-sac stalk.

SANDOR, G. (1951). Euglobuline I, entité physico-chimique et physico-pathologique. **[Euglobulin I, a physico-chemical and physico-pathological entity.]**—*C.R. Acad. Sci., Paris.* **232**, 2492-2494. **2100**

Euglobulin I is a γ-globulin with characteristic isoelectric solubility, electrophoretic and immunological behaviour, exerting an agglutinating effect in sera in immunized horses. It is produced as a result of the disease and is the protein antibody.—F. R. HARRIS.

TILLOTSON, F. W. (1951). **Effect of cortisone on the Arthus phenomenon as related to the time of sensitization. A comparison of histopathologic changes.**—*Arch. Path.* **52**, 119-127. [Author's summary slightly modified.] **2101**

When cortisone is given to rabbits during the time of active immunization serum-antibody formation is decreased. The severity of the Arthus reaction, said to be directly related to serum-precipitin titer, is likewise decreased. Histologically, at the injection site there is a small exudate and no vascular necrosis. When cortisone is given to rabbits after the completion of sensitization, little or no effect is produced on the serum titer or the vascular lesions of the Arthus reaction; however, the amount of exudate is reduced. The dosage of cortisone used, 2 mg. of the acetate per kg. per 24 hours, is less than twice the therapeutic dose used in man. Cortisone given over a period of three weeks produces definite but nonspecific histologic changes. In bone marrow, lymph nodes, thymus and adrenal glands there is moderate atrophy. In the adrenal glands the atrophy is confined to the zona glomerulosa and the peripheral zona fasciculata, where there is an associated decrease in fat. In the pituitary the granules of the beta cells are decreased. When cortisone is given for a period of five days, there are minimal atrophy of the adrenal cortex and slight to moderate atrophy of the thymus and the lymph nodes.

GERMUTH, F. G., JR., OYAMA, J. & OTTINGER, B. (1951). **The mechanism of action of 17-hydroxy-11-dehydrocorticosterone (compound E) and of the adrenocorticotropic hormone in experimental hypersensitivity in rabbits.**—*J. exp. Med.* **94**, 139-170. [Authors' summary copied *verbatim.*] **2102**

The concurrent administration of compound E at a daily dosage of 2 mg. per kg. to rabbits receiving daily intracutaneous injections of crystalline egg albumin markedly inhibited the development of anaphylactic hypersensitivity of the Arthus type. ACTH, when given at a similar dosage, produced a much less marked effect. Both hormones suppressed circulating antibody and as with the Arthus reaction, the suppression produced by compound E was much greater than that obtained with ACTH. When treatment with compound E was started following sensitization, there was a rapid decline in circulating antibody and, if the pretreatment serum antibody was low, there was also a progressive decrease in skin reactivity, becoming negative after 5 days of treatment. When the

pretreatment serum antibody concentration was great, so that by the termination of treatment the antibody concentration was still above the level ordinarily sufficient for a maximal skin response, the Arthus reaction was unaffected by treatment. These considerations as well as the failure of compound E to inhibit the systemic passive Arthus reaction suggest that the inhibitory effect of compound E and ACTH on the development of experimental hypersensitivity results from the hormonal reduction of circulating antibody. Treatment with compound E had no effect on the rate of disappearance of circulating antibody in the passively immunized rabbit. This finding suggests that ACTH and compound E reduce circulating antibody by inhibiting antibody formation rather than by promoting antibody destruction. The question is raised as to whether the marked lymphoid atrophy produced by these hormones may be related to the interference with antibody production.

KALLOS, P. [Edited by.] (1949). **Progress in Allergy.** pp. 356. Basel, New York: Karger, S. Swiss fr. 36. **2103**

The book consists of a collection of papers by different authors on theoretical and clinical aspects of the subject.

The chapter entitled "Allergic disease in animals" supplies the direct veterinary interest. Less than two pages are devoted to animals other than the dog. In the dog two cases of hay fever and asthma are described in which the sensitivity could be passively transmitted to other dogs by serum injection. The nature of the antigen was shown to be weed pollens.

The dog cases are factual evidence; in the other animals, however, such evidence as is presented is speculative. It is unfortunate that no mention is made of the many known and suspected allergy conditions in the cow and pig.

A paper with some interest to the veterinary reader is on dust and pollen therapy. The author comments on the lack of standardized methods of extraction. This is an important point and could be even more stressed. A strong case exists for standardizing methods of extraction of food stuffs, animal and human, house and kennel dusts, etc. At the moment activity can be shown only qualitatively not quantitatively.

A paper on the use of bronchoscopic lavage in status asthmaticus in man is interesting. This is a heroic measure intended to remove a yellow pasty mucus from the bronchi. There is no record of its use in animals—for example, in parasitic bronchitis.

A paper which may have an interest to veterinary workers describes aerosol therapy in the lungs and bronchi. This is an excellent description of the various atomisers and nebulisers for the introduction of antibiotics and sulphonamides and it is possible that some application could be made in the veterinary field.

An excellent essay is presented by Haxthausen of Denmark on allergy in diseases of the skin. This covers 66 pages and is an informative and well detailed description of allergic skin conditions, particularly the eczema syndrome in all its manifestations.

A useful list of references is appended to each paper.—W. R. KERR.

SAUNDERS, F. J. (1951). **Studies on the role of the adrenal in anaphylaxis and histamine-shock.** — *Endocrinology.* **49,** 185-188. [Author's summary copied *verbatim.*] **2104**

The susceptibility of mice to anaphylactic or histamine shock is increased markedly by adrenalectomy. Replacement therapy indicated that the neoglycogenic hormones play an important part in protection against anaphylaxis, while desoxycorticosterone was without effect. The antihistaminics were also effective in protecting adrenalectomized mice against anaphylactic and histamine shock, but were considerably more active against the latter.

THOMPSON, J. J. (1951). **Antihistamine therapy in pullet disease (avian monocytosis.)**—*Aust. vet. J.* **27,** 293-295. [Author's summary slightly modified.] **2105**

Administration of 0·1 g. of anthisan [neopyramine maleate] orally appears to be effective in controlling the acute form of "pullet disease". Birds in the subacute stage returned to normal feed consumption after a short interval and to normal egg yield earlier than untreated birds. Since the use of an antihistaminic has materially affected the course of the acute and subacute forms of the disease, it may be reasonably assumed that the condition is of an anaphylactic nature or that at least the histamine present in the organs and tissues is abnormal.

ANDERSON, D., BILLINGHAM, R. E., LAMPKIN, G. H. & MEDAWAR, P. B. (1951). **The use of skin grafting to distinguish between monozygotic and dizygotic twins in cattle.**—*Heredity.* **5,** 379-397. [Authors' summary slightly modified.] **2106**

An investigation has been made of the value of skin grafting for discriminating between monozygotic and dizygotic cattle twins, in accordance with the general rule that skin grafts exchanged between genetically dissimilar mam-

mals are rapidly destroyed. Skin was accordingly interchanged between the cattle of the following degrees of affinity:— (1) unrelated animals, individually of twin birth; animals related only by being of the same pedigree breed, and individually of separate birth; (2) full siblings of separate birth; (3) dizygotic twins of unlike sex; (4) twins of similar sex classified by ordinary phenotypic appraisal as dizygotic; (5) twins classified by ordinary phenotypic appraisal as monozygotic. Both monozygotic and dizygotic twins are tolerant to grafts of each other's skin. Skin grafts interchanged between animals of the other degrees of affinity are very rapidly destroyed. Not all dizygotic twin pairs are completely tolerant to grafts of each other's skin, and examples of chronic low-grade immunity reactions are reported. It is suggested that the anomalous tolerance of dizygotic cattle twins to grafts of each other's skin has the same origin as their conformity of immunological blood types.

See also absts. **1950-1951** (haemagglutination test in bovine TB.); **1954** (antibodies in TB.); **1959** (serology of polysaccharides from tubercle bacillus); **1969-1970** (B.C.G.); **1971** (vole bacillus); **1975** (mallein); **1981** (swine erysipelas vaccine); **1983** (listeriasis); **2003-2004** and **2009** (brucellosis); **2014** (botulism in mink); **2015** (haemagglutination reaction in botulism); **2052-2054** (F. & M. disease); **2061** (contagious postular dermatitis); **2066** (African horse-sickness vaccine); **2068** (Kabete attenuated goat virus); **2069-2070** (rinderpest); **2073** (avianized distemper virus); **2075** (contagious canine hepatitis); **2079** (Newcastle disease); **2089** and **2092** (Q fever).

PARASITES IN RELATION TO DISEASE [GENERAL]

Simmons, S. W. & Upholt, W. M. (1951). **Disease control with insecticides. A review of the literature.**—*Bull. World Hlth Org.* 3, 535-556. **2107**

An appraisal of the part played by parasiticides in the control of diseases transmitted by mosquitoes, lice, fleas, flies, Hemiptera, mites and ticks. The review includes trypanosomiasis, Chagas' disease, leishmaniasis, malaria, Japanese B encephalitis and equine encephalomyelitis (western type), murine and endemic typhus, enteritis, scabies, infestations with filarial worms and with *Schistosoma* and *Onchocerca*.

—C.M.S.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Menon, P. B., Sen Gupta, C. M. & Basu, B. C. (1951). **Studies on the feeding of insecticides for the control of ectoparasites.**—*Indian vet. J.* 27, 430-437. [Abst. from authors' summary.] **2108**

Varying doses of technically pure D.D.T., benzene hexachloride containing 0·6% γ-isomer, 2% pyrethrum extract or derris root powder containing 5% rotenone were administered orally to fowls with infestations of lice, *Menopon* and *Goniocotes* spp. In all cases there was definite reduction in lice population but at no time were the birds absolutely free.

D.D.T. in doses of 1 g. or 0·5 g. per kg. body weight, when administered orally to fowls on which *Argas persicus* were allowed to feed four hours after dosing, gave a maximum kill of 88·2% and 40% respectively. When the ticks were allowed to feed 72 hours after dosing with D.D.T. at the rate of 1 g. per kg. body weight, the kill was 80%.

Likewise, benzene hexachloride in doses of 1 g. or 2 g. per kg. body weight gave a maximum kill of 30% and 50% respectively, while with pyrethrum in doses of 1 ml. or 2 ml. per kg. body weight 43·75% and 60·0% kill was obtained. The administration of benzene hexachloride and pyrethrum extract in doses described above did not have any ill-effect on the health of the birds, but D.D.T. in doses of 1 g. and derris in doses of 0·5 g. and 1 g. per kg. body weight were lethal.

Enigk, K. (1949). Zecken- und Fliegenbekämpfung bei Weiderindern. **[Control of flies and ticks in cattle on pasture.]**—*Z. Tropen. Parasitol.* 1, 280-287. **2109**

This is a general discussion on the use of conventional parasiticides in the control of flies and ticks. Observations on the efficacy of D.D.T. made during two pasture periods were recorded.—E.G.

Graham, O. H. & Alford, H. I., Jr. (1951). **The occurrence of *Gasterophilus* spp. in Texas and some tests with insecticides for their control.**—*J. econ. Ent.* 44, 577-579. [Authors' summary slightly amended.] **2110**

An examination of 508 horse stomachs from February to August 1950 revealed that most of the horses in the vicinity of San Antonio, Texas, were infested with the larvae of *Gasterophilus intestinalis* or *G. nasalis*.

In laboratory tests third-instar larvae were extremely resistant to dieldrin, aldrin, heptachlor, D.D.T., methoxychlor, T.D.E., benzene hexachloride, toxaphene, chlordane [chlorinated hydrocarbons], and parathion [*o*-diethyl-*o*-*p*-nitrophenyl thiophosphate]. This observation

was verified when infested horses were treated with dieldrin, aldrin, heptachlor, chlordane and lead arsenate. After treatment with toluene at 20 cc. per 100 pounds of body weight no bots were removed from two horses.

SAVELIEV, D. V. & BREYEV, K. A. (1950). **[Control of *Hypoderma bovis* and *H. lineata*.]**—*Veterinariya, Moscow.* **27,** No. 12. pp. 11-16. 2111

Hypoderma bovis and *H. lineata* were effectively controlled by the application to the skin of affected animals of a 5% solution of D.D.T. in oil, 4–6 weeks after larvae were first noted or four weeks after the first nodules were felt under the skin, the treatment being repeated a month later. In cases where both species were present, application was made four times at monthly intervals. A table gives the infestation season for each species and the dates for remedial measures according to latitude and altitude.—F.A.A.

GLASGOW, J. P. & DUFFY, B. J. (1951). **Further observations on the extermination of *Glossina palpalis fuscipes* Newstead by hand-catching.** — *Bull. ent. Res.* **42,** 55-63. [Authors' summary slightly modified.] 2112

A block of a mile and a half of riverine forest on the Kuja River was separated from other riverine bush by clearings of 2 and 3 miles. Clearing costs were recorded.

An attempt was made to exterminate *G. palpalis* in the block by hand-catching. This failed, because the clearings did not exclude immigrant *G. palpalis*. More *G. palpalis* could be caught from boats on the river than from paths beside the river.

Two attempts were made to prevent *G. palpalis* from crossing the clearings, (a) by stretching hessian screens treated with D.D.T. right across the river, (b) by placing large numbers of D.D.T. treated "trap-screens" in the clearings. Neither had a decisive effect.

No evidence was found to indicate that hand-catching would not work in a completely isolated block, but it appears to be quite impracticable to isolate a block of *G. palpalis* bush on a permanent river.

JACKSON, C. H. N. (1948). **The analysis of a tsetse-fly population.**—*Ann. Eugen.* **14,** 91-108. 2113

A statistical analysis of the birth and death rates of *G. morsitans,* based upon data acquired from the recapture of marked flies. These findings were supported by observations of unmarked flies. Population estimates based upon marked fly estimates were low because of the early inactivity of young males. The statistical significance was examined of figures of weekly fluctuations in births and deaths during wet and dry seasons. The use of marked flies for the estimation of a fly population was compared with the ordinary method using extrapolation.—D. W. JOLLY.

HANSENS, E. J. (1951). **The stable fly and its effect on seashore recreational areas in New Jersey.**—*J. econ. Ent.* **44,** 482-487. [Author's summary copied *verbatim.*] 2114

Studies of biology and control of *Stomoxys calcitrans* along the New Jersey seashore were started in 1946. A survey of flies in three environments was made for 3 years using shingles coated with a sticky material. Fly annoyance on the ocean beach was found to be sporadic and always associated with westerly winds. Flies appeared on beaches within 15 minutes after wind shifted west and disappeared just as readily with unfavourable wind. The life history was found to be somewhat longer than in areas farther south. Breeding took place in deposits of marine vegetation above high tide line on the bay shore. *Stomoxys* breeding was found at temperatures to 88°F. Other muscoid larvae were found at higher temperatures.

Successful fly control of adult flies with tests of 0·5% emulsions of D.D.T., methoxychlor and T.D.E. [chlorinated hydrocarbons] when sprayed on the surface of weed to prevent emergence of adults led to community-wide control at Seaside Park. Over a 2-year period an estimated 90 to 95% control of emerging flies was obtained with the D.D.T. and methoxychlor applied at 2 quarts per 100 sq. ft. of weed surface. Methods of application and types of equipment used are discussed. Other possible control techniques and the nature of the problem are discussed in some detail.

I. PERRY, A. S. & HOSKINS, W. M. (1951). **Synergistic action with DDT toward resistant house flies.**—*J. econ. Ent.* **44,** 839-850. 2115

II. PERRY, A. S. & HOSKINS, W. M. (1951). **Detoxification of DDT as a factor in the resistance of house flies.**—*Ibid.* 850-857. [Authors' summaries copied *verbatim.*] 2116

I. Several compounds which have synergistic effect with pyrethrin also increase the insecticidal action of D.D.T. with houseflies when application is made topically with acetone solutions or by spraying kerosene solutions. Piperonyl cyclonene shows a very slight effect with a D.D.T.-susceptible strain of houseflies but strongly increased the mortality with resistant strains. Preliminary tests with T.D.E. [1,1-

dichloro-2,2-bis (*p*-chlorophenyl) ethane] and methoxychlor [1,1,1-trichloro-2,2-bis (*p*-methoxyphenyl) ethane] gave similar results. The extent of synergistic action may be determined by interpolating the amounts of D.D.T. and of piperonyl cyclonene required to cause 50% mortality from probit-log dosage lines for D.D.T. alone and plus synergist. The amounts of D.D.T. required may be reduced approximately 90% by using the optimum amounts of synergist either for topical or spray application. This action is not due to an increase in penetration in the presence of piperonyl cyclonene for application separately to different parts of the body gave the same result. In fact, the larger amounts of piperonyl cyclonene retard penetration of D.D.T. The optimum ratios of D.D.T. to synergist do not indicate any stoichiometric relation between them and in view of the mechanism of action described in the next report, none is to be expected.

II. Certain strains of house flies which exhibit a resistance to the effects of D.D.T. change a large portion of the absorbed D.D.T. into the relatively harmless ethylene derivative, D.D.E. [1,1-dichloro-2,2-bis (*p*-chlorophenyl) ethylene]. The extent of this reaction is approximately proportional to the resistance as measured by the dosage needed for 50% mortality by topical application to the thorax. Piperonyl cyclonene, which strongly increases the toxic effects of D.D.T., toward the resistant strains, inhibits most of the D.D.E. formation. A portion of the absorbed D.D.T. cannot be accounted for as D.D.E., unchanged D.D.T. or other known derivatives. Formation of some unknown substance is then a second defense which does not appear to be affected by piperonyl cyclonene. Considerable amounts of unchanged D.D.T. persist in the bodies of surviving resistant flies and are reduced only slowly over a period of several days during which the amount of D.D.E. remains unchanged while that of the unknown derivative increases. Flies of the susceptible strain also form D.D.E. but in very small amounts. Hence to a slight degree they also are resistant and the strains studied to date differ only quantitively in the manner of their resistance to D.D.T.

HARRISON, R. A. (1951). **Tests with some insecticides on DDT-resistant houseflies.**—*N.Z. J. Sci. Tech.* **32,** Sect. B. No. 6. pp. 5-11. **2117**

In D.D.T.-resistant houseflies resistance to an insecticide is greatest in the case of chemicals closely related to D.D.T., and least in the case of dissimilar chemicals such as benzene hexachloride, chlordane and compound 497, (oxygenated derivative of aldrin, a chlorinated hydrocarbon).—D. W. JOLLY.

MANAFOV, I. I. (1950). **[Toxic effects of *Simulium* on animals.]**—*Veterinariya, Moscow.* **27,** No. 5. p. 34. **2118**

Following an invasion lasting six hours by species of *Simulium* in the Caucasus, all the cattle in an area near several slow flowing streams became ill and some died.

Treatment given to affected animals consisted of cold showers, local treatment of bitten areas and administration of stimulants.—F.A.A.

GARSIDE, J. S. & DARLING, H. S. (1951). **Death of turkeys from attack by *Simulium griseicolle* Becker in the Northern Sudan.**—*Bull. ent. Res.* **42,** 583-584. **2119**

Two turkeys, exposed to the bites of a swarm of *S. griseicolle* died a few hours later. Deaths were apparently caused by severe and rapid anaemia following extensive haemorrhage, resulting from mass invasion and bites by the flies.—M. L. CLARKE.

MACKERRAS, I. M., RATCLIFFE, F. N., GILMOUR, D. & MULES, M. W. (1950). **The dispersal of DDT from aircraft for mosquito control. An account of experiments on the use of combat aircraft for aerial spraying.**—*Bull. Comm. sci. industr. Res. Org., Aust.* No. 257, pp. 64. 9pl. [Abst. from authors' summary.] **2120**

In north Queensland, Australia, a 5% solution of D.D.T. in light mineral oil, either with or without pyrethrins (0·014%), sprayed from low-flying aircraft at the rate of 2·5 imperial quarts per acre by successive parallel flights at intervals of 100 yd. and altitude approximately 100 ft. over the test areas resulted in a kill of Culicine mosquitoes of approximately 90%. Other Diptera and Neuroptera were also greatly affected. The effect of the treatment remained obvious for up to more than 12 days. Larvae and adults were rapidly killed, but pupae relatively little affected. Best results were obtained by treatment at dawn in slowly moving air in conditions that favoured the downward movement of the smallest drops of D.D.T. solution. Further testing in New Guinea and at Bougainville in the Solomon Islands demonstrated the effectiveness of the methods adopted against Anophelines and house-fly. Treatments using as little as 1·9 quarts per acre resulted in high mortality of adults and larvae and a residual effect for 7–8 days.

EDWARDS, E. E. & ARTHUR, D. R. (1950). **The control of the tick (*Ixodes ricinus* L.) on grassland.**—*Empire J. exp. Agric.* **18,**

119 - 128. [Abst. from authors' summary.] 2121

The authors made comparative tests involving the treatment of land infested by *I. ricinus*. Applications of D.D.T. and benzene hexachloride dusts proved highly effective in the eradication of the tick. Heavy dressings of ground burnt lime and phosphate in the form of basic slag, subsequent to cultural processes, also gave promising results, probably by producing a micro-climatic environment unsuitable for the survival of the tick, but the reductions in the infestations were temporary, particularly in the case of the treatment with basic slag.

BALDELLI, B. & ROMANELLI, V. (1950). Contenuto in istamina del sangue e della cute ed eosinofilia ematica nella rogna spontanea della cavia. **[Histamine content of the blood and skin of g. pigs affected with sarcoptic mange.**—*Arch. Vet. Ital.* **1,** 325-330. [English, French, German and Spanish summaries. Abst. from summaries.] 2122

The histamine content of the blood of g. pigs with spontaneous sarcoptic mange was more than twice that of the blood of healthy g. pigs. The histamine content of the skin of g. pigs affected with mange was less than half that of healthy g. pigs. Although there was eosinophilia the histamine levels were not proportional to the number of eosinophile leucocytes in the blood.

See also absts. **2046** (East Coast fever); **2308-2313** (reports, India).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

MAPES, C. R. (1951). **Studies on the biology of *Dicrocoelium dendriticum* (Rudolphi, 1819) Looss, 1899 (Trematoda: Dicrocoeliidae), including its relation to the intermediate host *Cionella lubrica* (Müller). I. A study of *Dicrocoelium dendriticum* and *Dicrocoelium* infection.**—*Cornell Vet.* **41,** 382-432. 2123

Examination of wild mammals from farm and other areas where infection was present, showed that *Marmota monax rufescens* (rufescent woodchuck) and possibly other mammals, *e.g.* deer, carry *D. dendriticum* and are probably of great importance in enlarging the enzootic area.

M. described typical *Dicrocoelium* infection.—BERYL A. KAY.

MAPES, C. R. & KRULL, W. H. (1951). **Studies on the biology of *Dicrocoelium dendriticum* (Rudolphi, 1819) Looss, 1899 (Trematoda: Dicrocoeliidae), including its relation to the intermediate host, *Cionella lubrica* (Müller). II. Collection of the snail, *Cionella lubrica*, and its maintenance in the laboratory.**—*Cornell Vet.* **41,** 433-444. [Authors' summary slightly modified.] 2124

Methods for collecting small terrestrial snails that may occur in limited numbers in habitats of sparse or short vegetation are presented. Snail traps, constructed from wet gunny sacks and rocks and adapted for use in such areas, are described, and phenomena connected with their use are discussed. Other possible methods of collecting molluscs are described, with comments on their merits and shortcomings.

A method of culturing *Cionella lubrica* in the laboratory, for detailed study of its life cycle and *Dicrocoelium dendriticum* infections in the snail, is described. Petri dishes were used as terraria, permitting easy and rapid observation and segregation of the snails at all times.

I. MIYAZAKI, I. & MANNOZI, N. (1950). **On the second intermediate host of *Paragonimus ohirai* (Miyazaki).**—*Med. & Biol., Tokyo.* **16,** 184-185. 2125

II. ISSHIKI, O. (1950). **A case of natural infection with *Paragonimus ohirai* in the dog.**—*Ibid.* **17,** 28-31. 2126

III. SAITO, M. & OISHI, J. (1951). **Natural infection of *Paragonimus ohirai* (Miyazaki) in pigs.**—*Ibid.* **18,** 142-145. 2127

I. The metacercariae of *P. ohirai* were found in two species of crabs (*Sesarma intermedia* and *S. dehaani*) at the mouth of the Kuma river. In June and August, 1949, cercariae were found in *Helice tridens tridens* and *Chasmagnathus covexus*.

II. *Paragonimus westermanii* had been considered to be the only species of the lung-fluke found in Japan. I. Mayazaki, however, found in 1939 a new species, *P. ohirai*, and in 1945 also a subspecies. These two are difficult to differentiate from each other in the adult stage; their cercariae are easily differentiated.

Specimens collected from a dog by Yada in 1934-37 in Osaka City were identified as *P. ohirai* or a subspecies (now named *P. iloktsuennensis*). This is believed to be the first case of natural infection in the dog. Artificial infestation with *P. ohirai* in dogs and other small animals has been produced.

III. Since 1949, the authors have collected a large number of lung-flukes from pigs reared

in Miyazaki and Kagoshima districts and identified them as *Paragonimus ohirai* (Miyazaki).

The infestation rate in pigs, bred in the two districts and slaughtered at the Tokyo abattoir, was 1%; Miyazaki district rates of 0·2% and of 1·2% of infestation have been recorded.

—KOGI SAITO.

KRISHNAMURTHY, D. (1949). *Cysticercus cellulosae*. **Their incidence in canines.**—*Indian vet. J.* **25**, 367-370. **2128**

C. cellulosae was found in seven of 500 dog carcasses examined in Madras, the cysts being present in the brain of all seven. The cysts were also present elsewhere in the bodies of these dogs: details are given. In five of the seven there had been cerebral symptoms. Two of these were declared to be infected with rabies. In the other three the cysts were responsible for the syndrome.—K. N. MEHRA.

GIBSON, T. E. (1951). **The action of six samples of phenothiazine of varying particle size on pure infestations of** *Trichostrongylus axei* **in sheep.**—*Brit. vet. J.* **107**, 377-379. [Author's summary copied *verbatim*.] **2129**

A small experiment carried out on twelve sheep demonstrated that six phenothiazine preparations of different particle sizes were all highly efficient when given in full therapeutic doses in eliminating *Trichostrongylus axei* from sheep. Three of these preparations were of recent origin and had larger particles than a similar preparation previously on the market, but no difference in efficiency was detected between them. The difference in particle size of phenothiazine preparations now supplied to farmers compared with those formerly available cannot therefore be blamed for the decrease in efficiency of phenothiazine in the treatment of parasitic gastritis of sheep reported recently from the field.

ROSEN, E. (1952). **Cortisone treatment of trichinosis.**—*Amer. J. med. Sci.* **223**, 16-19. [Author's summary copied *verbatim*.] **2130**

Cortisone therapy appeared to be of striking benefit in a moderately severe case of trichinosis. Further clinical trials of cortisone and ACTH [adrenocorticotrophic hormone] are warranted in this disease.

HOERLEIN, B. F. (1951). **Further studies on the chemical treatment of soil infected with larvae of the dog hookworm** (*Ancylostoma caninum*).—*Vet. Med.* **46**, 350-355. [Abst. from author's conclusion and summary.] **2131**

An evaluation of four different borates, calcium cyanamide and sodium chloride on artificially contaminated soil plots was made. The borates appeared to be the most effective for destruction of the larvae. In three field tests using sodium borate as the soil larvicide, two, in which good husbandry was practised, gave excellent results; the third, in which the husbandry was not satisfactory, gave poorer results. An outline of the control of ancylostomiasis in dog runs with earth floors was given. H. considered that when soil is treated with a satisfactory larvicide such as sodium borate in conjunction with good husbandry methods, the dog hookworm can be controlled.

SELLERS, K. C. & TAYLOR, E. L. (1951). **A controlled observation on the value of antimony lithium thiomalate ("Anthiomaline") in the treatment of husk in cattle.**—*Vet. Rec.* **63**, 707-709. [Authors' summary copied *verbatim*.] **2132**

A controlled observation on the efficacy of "Anthiomaline" in the treatment of an acute outbreak of husk in a group of 49 cattle failed to show any beneficial effect and it is concluded that the favourable opinions formed as a result of clinical observation alone are to be explained by the simultaneous introduction of other factors including removal from infected pastures and improved diet.

PFIZENMAIER, G. (1951). Die Lungenwurmseuche bei den württembergischen Wanderschafherden und ihre medikamentelle Behandlung unter Verwendung der Surfen-Jod-Suspension. **[Treatment of lungworms in sheep with surfen-iodine suspension.]**—*Tierärztl. Umsch.* **6**, 213-216. **2133**

Six hundred sheep with *Dictyocaulus filaria* and *Muellerius capillaris* infestations were given a surfen [bis-2-methyl-4-aminoquinolyl-6-melamine]-iodine suspension in two intra-tracheal injections with an interval of eight days, the total dose ranging from 6–15 ml. (concentration not stated) according to the age of the animal. Four faecal examinations during the month after treatment showed that the elimination of *Dictyocaulus filaria* larvae dropped rapidly and remained low, but those of *Muellerius capillaris* dropped during the first six days and then steadily increased.—M. L. CLARKE.

BAUDET, E. A. R. F. & VERWEY, J. H. P. (1951). Protostrongyloides cervi n.g. n. sp. als oorzaak van een dodelijke bloeding in de schedelholte bij een hert (Cervus elaphus). [*Protostrongyloides cervi* **in a red deer** (*Cervus elaphus*).]—*Tijdschr. Diergeneesk.* **76**, 485-488. [English, French and German summaries. Abst. from English summary.] **2134**

Description of a worm, named by the

authors *P. cervi,* from the cranial cavity and the spinal canal of *Cervus elaphus,* causing fatal haemorrhage in the cranial cavity.

GRAÑA, A., MANN, F. C. & ESSEX, H. E. (1947). **Influence of the liver on the shock produced by extracts of certain parasites.**—*Amer. J. Physiol.* **148,** 243-252. 2135

Intravenous injections of *Ascaris* extract and hydatid fluid into dogs produced a fall in blood-pressure, due mainly to congestion of the liver. The authors concluded that it is probably not an anaphylactic reaction.

—GEORGE M. URQUHART.

GÄRTNER, H. & MÜTING, L. (1951). Über die Infiltrationstiefe von Askarideneiern im Boden. **[Depth of soil penetration by ascarid ova.]**—*Z. Hyg. InfektKr.* **132,** 59-63. 2136

Two sets of tests were made to determine the depth of penetration of ascarid eggs in soil irrigated by sewage, (a) comprising 13 samples taken 11 months after irrigation, and (b) 7 samples 4–6 days after irrigation. With one exception penetration did not extend beyond a depth of 50 cm. in either test.

—M. L. CLARKE.

ARTIOLI, D. (1947). Studio anatomo-istopatologico dell'onchocercosi aortica nei bovini dell' Africa Orientale. **[Histopathology of onchocercosis of the aorta in East African cattle.]**—*Atti Soc. ital. Sci. vet.* **1,** 255-273. [English and French summaries.] 2137

A description of macroscopic and microscopic changes in the aorta of African cattle infected with *Onchocerca armillata.*

—B. BALDELLI.

PIERCY, S. E. (1951). **A note on canine filariasis.**—*Brit. vet. J.* **107,** 311-314. [Author's summary slightly modified.] 2138

A description of a case of canine filariasis believed to be due to *Acanthocheilonema dracunculoides.* A cure was obtained using stibophen (trivalent antimony) [sodium antimony-bispyrocatechol-3,5,-sodium disulphonate]. Measurements of the microfilariae studied were recorded.

GARKAVI, B. L. (1950). **[*Streptocara crassicauda* infestation in ducks.]**—*Veterinariya, Moscow.* **27,** No. 1. p. 30. 2139

Ducklings that had fed on crustaceans, *Gammarus lacustris* in a deep lake, died 3–5 days after the onset of symptoms. *S. crassicauda* was found in the gizzards; 24·6% of *G. lacustris* examined were found to harbour the nematode. Sixteen healthy ducklings fed *G. lacustris* all became infested after 2-17 days. The remaining birds were therefore transferred to a shallow lake as *G. lacustris* inhabits only deep water. No further infestations occurred.

—F.A.A.

VAN CLEAVE, H. J. (1949). **Morphological and phylogenetic interpretations of the cement glands in the Acanthocephala.**—*J. Morphol.* **84,** 427-457. 2140

The author described a macroscopic and microscopic study of the cement glands of the Acanthocephala. There are three different types: single syncytial; multiple with uninucleate follicles; and multiple with numerous nuclear fragments in each follicle.

The ontogenetic and phylogenetic relationships were discussed.—ANITA M. MANDL.

See also absts. **2302** (cinemicrophotography of helminths); **2309-2310** (reports, India); **2317** (book, snail hosts of *Schistosoma* in Africa).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

SAUNDERS, L. Z., STEPHENSON, H. C. & MCENTEE, K. (1951). **Diabetes insipidus and adiposo-genital syndrome in a dog due to an infundibuloma.**—*Cornell vet.* **41,** 445-458. 2141

The polyuria, adiposity, and genital atrophy shown by a 12-year-old male dog were considered to be the result of a "glial tumour, with features of infundibuloma" encroaching on the pituitary and hypothalamus. The relevant literature was discussed.—E. COTCHIN.

LASSERRE, R., PUGET, E., VALLÉE, M. & BORREL, A.-J. (1951). Embryo-cultures ultravirulentes à partir de tumeurs vénériennes du chien. **[Venereal tumours in dogs. Cultivation of the virus in chick embryos.]**—*C.R. Acad. Sci., Paris.* **232,** 1715-1716. 2142

Extracts of venereal tumours of dogs inoculated into 50 chick embryos killed 42 embryos within 24 hours. Filtrates of dead embryos were passaged, giving in one experiment 20% mortality after the third passage, and in another 30% mortality after the seventh passage, thus indicating the presence of a filtrable virus.

—C.M.S.

WOLL, E., DORNBUSH, A. C. & LITTLE, P. A. (1951). **Rous sarcoma in folic acid-deficient**

chicks. Morphology and bioassay.—*Cancer Res.* **11**, 788-790. **2143**

A marked decrease in the growth of Rous sarcoma is seen in chicks deficient in folic acid as compared with normal chicks. Changes noted in the tumour cells such as increase in size, hydropic swelling of the nucleus and apparent concentration of chromatin were also present in intestinal epithelium and immature bone marrow cells. Rous sarcoma tissue contained more folic acid than normal tissues of the tumour site, both in normal and deficient chicks.—E. COTCHIN.

YOSHIDA, N. & KAMOTO, K. (1949). **[Studies on the primary hepatoma in ducks.]**—*Jap. J. vet. Sci.* **11**, 35-52. [In Japanese. Abst. from English summary.] **2144**

Liver lesions, comprising periportal parenchymatous degeneration and inflammation, bile-duct proliferation, regeneration and nodular hyperplasia of liver cells, and adenoma and eventually hepatoma formation, were increasingly encountered over a period of five years in ducks at the Zootechnical Experimental Station of the Ministry of Agriculture and Forestry. Of 1,113 ducks over three months of age 148 died with liver lesions.—E. COTCHIN.

RHOADS, C. P. (1951). **Ewing: the experimental method and the cancer problem.**—*Bull. N.Y. Acad. Med.* **27**, 606-622. **2145**

In this sixth James Ewing Memorial Lecture, analogies were drawn between infection, the invasion of the body by a bacterial cell, and cancer, the invasion of the body by a neoplastic tissue cell. Principles that are of value in the control of infectious disease may serve as guides in the control of neoplastic diseases. Thus, a search may be made for chemical agents that will selectively injure or kill the cancer cell while leaving the normal cells of the body unhurt. If, for example, it can be proved that specific patterns of nucleic acid anabolism characterize neoplastic as contrasted with normal cells, a high degree of selective chemical toxicity could be expected from the use of suitable anti-metabolites of nucleic acid precursors.—E. COTCHIN.

COOK, R. H. & OLSON, C., JR. (1951). **Experimental transmission of cutaneous papilloma of the horse.**—*Amer. J. Path.* **27**, 1087-1097. [Authors' summary slightly modified.] **2146**

Equine cutaneous papilloma is an infectious disease normally confined to the skin of the nose and lips. Susceptible horses were infected by inoculating the skin of the neck with suspensions of ground papillomatous tissue and with bacteriologically sterile filtrates made from these suspensions.

The active agent was not affected when held at a temperature of 45°C. for 30 min. but was rendered non-infectious when held at 55° and 65°C. This agent remained active 73 days when stored in 50% glycerol at 4°C., but was inactive after 112 days. In a suspension frozen at −35°C., the causative agent remained active for 185 days, but not for 224 days.

Some degree of immunity seems to be produced by experimental infections. Natural infections induce solid immunity.

Six calves, four lambs, three dogs, four rabbits, and four g. pigs were resistant to inoculations with known active suspensions of equine cutaneous papilloma.

ALBERT, S., JOHNSON, R. M. & COHAN, M. S. (1951). **Phosphorus metabolism in resting and pregnancy-stimulated mammary glands and in spontaneous mammary carcinomas of mice.**—*Cancer Res.* **11**, 772-776. **2147**

The desoxypentosenucleic acid phosphorus increases in mouse mammary carcinoma above resting and pregnancy levels. Pentosenucleic acid phosphorus is relatively stable.

—JOHN SEAMER.

See also absts. **2080-2081** (fowl leucosis); **2082** (fowl paralysis); **2083** (lymphomatosis in fowls); **2308** and **2310** (reports, India).

NUTRITIONAL AND METABOLIC DISORDERS

MARSTON, H. R. (1950). **The organization and work of the Division of Biochemistry and General Nutrition of C.S.I.R.**—*Proc. roy. Soc. Ser. B.* **137**, 18-39. **2148**

The Division directed its attention to the nutritional biochemistry of sheep, with especial regard to factors which influence wool production and to trace elements. Much of the Southern Coast of Australia is covered with calciphile grasses, and it has not been possible to raise cattle there, owing to a wasting disease. This condition has been reproduced on a cobalt deficient diet, but in ruminants only. Animals dying of the disease have normal hepatic cobalt content, and treatment is only successful by oral dosing with cobalt salts. It is believed that the element is required for the ruminal microflora and not directly for blood formation (anti-pernicious anaemia, A.P.A., factor).

Copper deficiency is characterized by poor keratinization of wool, which loses its crimp and also its pigment in the case of black sheep.

Poorly keratinized wool stains peculiarly with alkaline nitro-prusside. More serious manifestations are interference with iron metabolism and the production of swayback in lambs.

By special chemical manuring, useful pasture crops can be grown in the deficient area.

—JOHN SEAMER.

BALCH, C. C., KELLY, A. & HEIM, G. (1951). **Factors affecting the utilization of food by dairy cows. 4. The action of the reticulo-omasal orifice.**—*Brit. J. Nutrit.* **5,** 207-216. [Authors' summary slightly modified.] **2149**

A description is given of a simple type of kymograph suitable for taking tambour readings over periods of up to 24 hours. The movements of the reticulo-omasal orifice in relation to the contractions of the reticulum, the anterior pillar of the rumen, the omasum and the abomasum were studied by means of small, lightly inflated balloons. During resting, eating, ruminating, lying, drinking and while the cow was being milked, the reticulo-omasal orifice functioned to a constant pattern. For the greater part of the reticulo-ruminal cycle of contraction the reticulo-omasal orifice was loosely open, but following the last reticular contraction the orifice closed strongly.

The last reticular contraction was accompanied by a marked fall in pressure in the neck of the omasum, followed by a marked rise of pressure in the omasum which coincided with the closure of the reticulo-omasal orifice.

The transfer of digesta from the reticulum and anterior rumen was most likely to occur at the time of the last reticular contraction, coinciding with the fall in pressure in the omasum. It is therefore probable that the passage of digesta from the reticulo-rumen is relatively continuous throughout the 24 hours and is largely controlled by the valve-like action of the omasum.

JACOBSON, W. C., CONVERSE, H. T., WISEMAN, H. G. & MOORE, L. A. (1951). **The effect of substituting colostrum for whole milk in the ration of dairy calves.**—*J. Dairy Sci.* **34,** 905-910. [Authors' conclusions copied *verbatim.*] **2150**

Calves fed colostrum milk until 60 days of age had much higher vitamin A and carotene blood levels than calves fed whole milk. The weight gains of these two groups of calves were about the same. This would indicate that colostrum, when fed on the same dry matter basis as whole milk, can be used to replace whole milk. The extra antibodies consumed by the colostrum-fed calves did not prevent the occurrence of scours but seemed to aid in the prevention of fatal infections.

CARPENTER, K. J. (1951). **The relative nutritional values of animal and vegetable proteins for animals.**—*Brit. J. Nutrit.* **5,** 243-249. [Author's summary copied *verbatim.*] **2151**

Animal protein feeding-stuffs such as fish meals and dried skim milk are rich sources of vitamins, important for non-ruminant livestock. The recent introduction of condensed fish solubles, 'animal protein factor' concentrates from the antibiotics industry and synthetic riboflavin as alternative sources of these vitamins will provide a greater field for the use of otherwise suitable vegetable proteins which are not also potent sources of these factors. Research has shown that they are generally inferior to animal proteins, but that this may be made up for by feeding them at higher levels. Whether such a change is economically worthwhile will depend upon the cost of any extra vitamin supplements needed, as well as on the relative cost of the protein supplements themselves. The use of vegetable proteins may be particularly important in the colonial development areas where fish meal and milk products are not normally available for pig and poultry feeding. Unfortunately, ordinary grass and leaf meals are high in fibre, and cottonseed meal contains a growth depressant. These limit their usefulness at present, but new processing methods may be worked out to overcome these difficulties.

WHIPPLE, G. H. & ROBSCHEIT-ROBBINS, F. S. (1951). **Anemia plus hypoproteinemia in dogs. Various proteins in diet show various patterns in blood protein production. Beef muscle, egg, lactalbumin, fibrin, viscera and supplements.**—*J. exp. Med.* **94,** 223-242. **2152**

The normal canine body produces 2 g. haemoglobin to 1 g. plasma protein. In the biological assay of proteins described, using double depleted dogs, it was possible to keep the experimental animals at levels of 6–8 g.% haemoglobin and 4–5 g.% plasma protein for a considerable time. Tables show the protein output and the plasma protein: haemoglobin ratio for dogs fed various dietary proteins. Casein, fibrin and beef muscle favour haemoglobin production and are rated high as foodstuffs. Egg protein, albumin and lactalbumin produce less haemoglobin, but may be supplemented sucessfully by histidine. Peanut and soya bean flours are poor, and visceral products [ground up cooked kidney, pancreas and stomach of pigs, calf thymus etc.] generally of less value

than casein. Folic acid supplements did not improve the dietary values of the proteins.

—K. J. SINCLAIR.

ANON. (1951). **Utilization of non-specific nitrogen.**—*J. Amer. med. Ass.* **146,** 1137. 2153

The clinical and economic importance is emphasized in the report that protein-depleted rats gain weight faster when supplied some nitrogen in addition to the essential amino-acids.

—P. H. HERBERT.

SEEKLES, L. (1950). **Mode of action and occurrence of trace elements in pastures and in the blood and liver of farm animals.** In " Trace Elements in Plant Physiology " pp. 119-141. [Waltham, Mass.: Chronica Botanica Co.; London, W.C.2: Wm. Dawson & Sons Ltd.] [Abst. from author's summary.] 2154

[As the title indicates most of the papers in this symposium deal with plants. The contribution of Seekles relates the effects of the trace elements in the plants to the animals which graze upon them and his conclusions are as follows:-]

In cattle real and conditioned deficiency of copper was observed in the diluvial and alluvial parts of the Netherlands; a shortage of cobalt was observed mainly in diluvial areas. Pasture grass and hay originating from sandy soils have more manganese than those from peat soils. Pasture grass from clay has the lowest manganese content. The *p*H value of soils affects the absorption of manganese by plants, the lower the *p*H, the more manganese is absorbed. Manuring of pastures on clay lands with phosphate, containing much manganese, results in a considerable rise of the manganese content of the pasture grass. Sterility, caused by manganese deficiency in cattle, may well be expected in clay areas with a high *p*H. No relation could be established between the occurrence of grass tetany in cattle and the manganese content of pastures.

Trace elements act as bio-catalyzers of enzyme action in fundamental processes of intermediate metabolism; this accounts for the great variety of clinical symptoms in diseases caused by deficiency. In many cases scouring occurs. Increased motility of the intestine results in a decreased absorption of trace elements and a low content in blood and tissues (liver). An increased intestinal motility may result from different chemical and microbiological factors affecting the intestine. Cattle liver has a low copper content, but there is a wide variation. In horse liver there is less variation of copper content and the average content is higher. In a three weeks balance trial with a heifer, about 17% of the copper sulphate added to the food was retained in the body. Radio-active copper, intravenously injected into calves, was stored in the liver to a considerable extent, *e.g.*, up to 24·5% of the quantity injected over 3¾ hours. Evidence was obtained that copper, injected intravenously into horses, is, in the same way, rapidly transferred to the tissues. So far no evidence has been obtained that selenium and molybdenum play a part in the diseases of farm animals in the Netherlands.

BUNTING, H. (1951). **Histochemical analysis of pathological mineral deposits at various sites; with discussion of methods used.**—*Arch. Path.* **52,** 458-469. [Author's summary modified.] 2155

Various sites of mineralization in the body have been investigated for the presence of calcium, iron, carbonate, and phosphate. Blood vessel walls in the brain and elsewhere and granular deposits in the brain, the choroid plexus, the kidney, and in other organs have all been found to contain calcium, iron, carbonate, and phosphate. Some foci of mineralized myocardial fibers have contained phosphate and iron, while others have yielded positive results in tests for calcium and carbonate as well.

DUNLOP, G. (1951). **The response of dairy herds to a single dose of copper.**—*Brit. J. Nutrit.* **5,** No. 2. pp. iv-v of Absts. [Only abst. given. Abst. copied *verbatim.*] 2156

Some forty farmers are co-operating with The West of Scotland Agricultural College in an investigation on the nutritional adequacy of rations fed to dairy herds. Altogether 2,500 cows are on experiment. Feeding-stuff firms, mineral-lick manufacturers and vitamin suppliers are assisting in the work.

Following the addition of 10 g. copper sulphate to an evening concentrate allowance 24 hour–10 days before the visit of the milk recorder, positive responses in butterfat production have been obtained in herds fed rations supplied, or contributed to, by National feeding-stuff firms and mineral-lick manufacturers. Responses have been observed in certain cows in herds averaging over 4% butterfat. The low fat percentage in the milk of certain animals in a herd exhibiting cows at the London Dairy Show has been shown to be due to deficiency of copper. No response has been elicited in less intensively farmed districts where the herds are fed the local feeding-stuff merchant's rations or the farmer's own dairy mixtures which do not include trace elements.

SCHULZ, K C. A., VAN DER MERWE, P. K., VAN RENSBURG, P. J. J. & SWART, J. S. (1951).

Studies in demyelinating diseases of sheep associated with copper deficiency. I. "Lamkruis," a demyelinating disease of lambs occurring in South Africa. II. A biochemical investigation on the incidence of "Lamkruis" in lambs in the Saldanha Bay, Vredenburg, and St. Helena Bay environs. III. Experimental studies, treatment and control measures.—*Onderstepoort J. vet. Res.* 25, No. 2. pp. 35-78. 2157

"Lamkruis" or 'swaaigat" and "litsiekte" are Afrikaans names applied by farmers to a disease of lambs the most prominent symptoms of which is swaying of the lumbar region and hindquarters and knuckling over of the fetlock joints particularly of the hind limbs. Pathologically the disease is an encephalomalacia very similar to the enzootic ataxia of New Zealand and the swayback of Gt. Britain. It is common in some coastal districts of S. Africa; it is associated with a copper deficiency and can be prevented by dosing the pregnant ewes with copper. The history of the disease in S. Africa is described, as are the geology of the affected area, the epidemiology, symptoms, pathology, histology, diagnosis, aetiology, etc. Only lambs and goat kids are affected, but a paresis of young buck has been observed. It is also stated that in the affected areas a wasting disease of sheep and cattle occurs and that "broken wind" in draught cattle and osteofibrosis of horses are very prevalent. Recently a disease similar to the "falling disease" of Australia has been observed in adult cattle.

Although the disease may be prevented by feeding copper supplements it is not a straightforward copper deficiency and some other conditioning factor apparently operates. A detailed study of the biochemical aspects of the condition has been made and the results are given.

Further study is required, particularly of the neurological aspects and of the pathology of the less prominent changes in the cerebellum, brain-stem and adrenal glands.—M.C.

ROSENHEIM, M. L. (1951). **Sodium.**—*Lancet.* 261, 505-510. 2158

Maintenance of sodium homoeostasis appears to be under endocrine control. Disturbances of sodium excretion occur in Addison's disease, salt-losing nephritis, excessive administration of deoxycortone, congestive cardiac failure, and acute glomerular nephritis. There is evidence that hypertension is related to excessive sodium retention.—R. MARSHALL.

DANFORD, H. G. & DANFORD, P. A. (1951). **Circulating leukocytes in sodium chloride deficient rats and their response to epinephrine, ACTH, cortisone and desoxycorticosterone acetate.**—*Amer. J. Physiol.* 166, 524-527. 2159

The effects of sodium chloride deficiency in rats suggest increased adrenocortical production of 11-oxysteroids, and decreased response to exogenous A.C.T.H.—F. R. HARRIS.

DANOWSKI, T. S. & ELKINTON, J. R. (1951). **Exchanges of potassium related to organs and systems.**—*Pharmacol. Rev.* 3, 42-58. [Authors' conclusions amended.] 2160

Potassium is a substance ubiquitous in living organisms. The wide scope of activities of this ion is indicated by experimental observations.

ARCHIBALD, J. G. (1951). **Molybdenum in cows' milk.**—*J. Dairy Sci.* 34, 1026-1029. [Abst. from author's summary.] 2161

Molybdenum appears to be a natural constituent of cows' milk, the amount varying from 40–70 μg. per l. in different individuals. Feeding 500 mg. daily of ammonium molybdate to eight cows for periods of two months increased the average amount about fivefold; the molybdenum level in these milk samples was higher than that of manganese and much higher than that of cobalt, the response being greater than for any other trace element studied thus far.

The possibility that any of the molybdenum in the milk samples was due to metallic contamination from the milking machine was eliminated by tests. Analysis of composite samples of cream and skimmed milk indicated that most of the molybdenum in "control" milks or in those from cows receiving a molybdenum supplement was concentrated in the cream fraction. The possible significance of these findings from the standpoint of toxicology is discussed briefly.

STEWART, J. (1951). **Induced cobalt deficiency in lambs.**—*Brit. J. Nutrit.* 5, 320-326. [Author's summary modified.] 2162

In-lamb ewes were fed a diet of 1100 g. flaked maize, 250 g. hay and 60 g. mineral mixture daily for the last 3 months of pregnancy. This diet allowed of a daily ingestion of 0·0687 mg. cobalt. Their lambs when weaned at 10 weeks of age were given 800 g. flaked maize, 80 g. hay, 25 g. mineral mixture daily (0·0347 mg. cobalt), increasing steadily to the quantities in the ewe's diet at 16 weeks of age. These lambs all eventually had the clinical signs of cobalt deficiency but made immediate dramatic response if fed 10 mg. cobalt/week. Lambs given the same basal diet with a supplement of 10 mg. cobalt from birth all gained weight normally.

KIVIMÄE, A. (1949). **Phosphorus and calcium consumption by dairy cows on pasture.**—*Excerptum Apophoreta Tartuensia, Stockholm,* 318-323. [Abst. in *Nutr. Abstr. Rev.* 21, 216 (1951); copied *verbatim.* Signed: J. S. THOMSON.] 2163

The trials were made at the Royal Agricultural College of Sweden in the summers of 1945–48 with 50 Swedish red and white cows. The composition of the pasture showed an average Ca content of 0·7 per cent and an average P content of 0·3 per cent of the dry matter. Mineral salts were supplied to appetite; disodium phosphate, dried disodium phosphate, monosodium phosphate, dicalcium phosphate, limestone and salt.

Ground limestone and dicalcium phosphate were less palatable than the others, only 4 to 5 g. of the former and 7 to 8 g. of the latter being consumed daily as compared with 30 to 50 g. of sodium phosphate. Monosodium phosphate was more palatable than disodium phosphate. The most suitable mineral mixture was found to be 50 per cent monosodium phosphate, 15 per cent dicalcium phosphate, 5 per cent limestone and 30 per cent salt. The addition of 10 per cent of molasses to the mixture increased the consumption of minerals. It is concluded that pasture alone cannot supply the mineral requirement of cows.

HORI, S. *et al.* (1951). **[Studies on protein components of bones of horses affected with osteomalacia.]** [Osteofibrosis?]—*J. Jap. vet. med. Ass.* 4, 180-183. 2164

Distribution of amino acid components of osseous protein of the metacarpal and metatarsal bones was examined in nine horses consisting of four heatlhy adults, one colt, three affected with osteomalacia and one affected with osteoporosis.

The following results were obtained in this study:— (1) Fresh bone constituents, healthy adults 17%, colt 22%, osteomalacia 22%, osteoporosis 15%; (2) Crude protein, healthy adults 26%, others up to 35%; (3) Monoamino acid and diamino acid fractions, healthy adults 2·8 g.N of monoamino acid per 100 g. of dehydrated bone constituents. 1·1 g.N of diamino acid. Mono : diamino acid ratio = 100 : 38, diamino acid osteomalacia about 1·4 g., osteoporosis 1·8 g., di : mono amino acid ratio 41 : 72; (4) N in arginine state, in healthy adults 0·53 g. others, no change. N in histidine state, in healthy adults 0·14 g. in colt, increase, in others increase three times normal quantity, N in lysine state, healthy adults 0·41 g., in colt, no change, in others remarkable change. In osseous protein of the horses affected with osteomalacia and osteoporosis, respectively, N in non-amino acid state in the fraction of monoamino acid originated from ½ of N of tryptophane and the whole N of histidine, proline and oxyproline increased obviously.—S. SAKASEGAWA.

EWER, T. K. (1951). **Rickets in sheep. I. The experimental production of rickets in young sheep. II. Measurement of phosphorus absorption.**—*Brit. J. Nutrit.* 5, 287-300 & 300-306. [Author's summaries copied *verbatim.*] 2165

I. A study was made of the effect of phosphorus, calcium and vitamin D_2 on the aetiology of rickets experimentally produced in Welsh lambs. A diet containing a minimum quantity of vitamin D (0·025 i.u./g.) and P (0·3 g.) daily but supplemented with Ca was found to be strongly rachitogenic. Large doses of vitamin D_2 given orally (25 mg. calciferol in 10 ml. arachis oil) prevented the occurrence of rickets but had no effect upon growth. The protective action lasted approximately 2 months. A similar dose of vitamin D_2 was effective in temporarily curing rickets in a sheep kept on the low-P, high Ca diet. The addition of disodium phosphate to bring the intake of P to 1·9 g./day prevented rickets and enabled the lambs to grow well. Transferring two normal sheep from a high-P, high-Ca diet to the low-P diet unsupplemented with Ca led to a fairly severe hypophosphataemia but no rachitic lesion. The importance of a wide Ca : P ratio in the causation of rickets in sheep is emphasized. The low demand for vitamin D in sheep over 1½ years old when phosphorus intake is sufficiently high is also stressed.

The results are reported of a small series of balance trials, designed to ascertain the effect of a single massive dose of vitamin D_2 on P retention and on the digestibility of the dry matter eaten by normal and rachitic sheep. Most of the rachitic sheep that maintained their weight were in negative P balance. The effect of giving one large dose of vitamin D_2 was to increase P retention, and apparently the effect was sufficient in some instances to make negative balances positive. The utilization of feed in terms of dry matter was increased approximately to the same degree by both high-P supplementation and dosing with vitamin D.

SANDSTEDT, H. & CARLQUIST, H. (1951). En manganbristbetingad rakitisform hos svin. **[Manganese deficiency as the cause of rickets in a pig.]**—*Nord. Vet.-Med.* 3, 1118-1122. [In Swedish. English and German summaries.] 2166

Manganese deficiency caused rickets in a

pig, with swollen hocks. Prophylaxis appeared to be the only successful method of treatment as attempts at curative treatment failed.

—F. R. HARRIS.

BRAUDE, R., KON, S. K., MITCHELL, K. G. & THOMPSON, S. Y. (1951). **Some observations on vitamin A requirements of pigs.**—*Vet. Rec.* **63,** 671-673. [Authors' summary copied *verbatim.*] **2167**

In an attempt to produce naturally suckled young piglets with very low reserves of vitamin A, one sow that had already produced five litters on a normal diet was deprived of vitamin A for nearly two years, during which time she produced a further four litters apparently normal at birth, but reared successfully only the first three. Three gilts from her first litter on the vitamin A deficient diet were kept on the same diet, and produced litters of their own. The degree of vitamin A depletion of the animals was studied by analysis of blood, colostrum, milk and liver.

HIBBS, J. W., POUNDEN, W. D. & KRAUSS, W. E. (1951). **Studies on milk fever in dairy cows. III. Further studies on the effect of vitamin D on some of the blood changes at parturition and the composition of colostrum in normal and milk-fever cows.**—*J. Dairy Sci.* **34,** 855-864. [Abst. from authors' summary.] **2168**

Five million units of vitamin D were fed daily for two weeks prepartum and for three days postpartum to one of two groups of nine Jersey cows each. All cows were fed a high mineral ration containing 5% steamed bonemeal at the rate of 6 lb. daily beginning eight weeks before the due date and continuing for one week postpartum. Blood samples were drawn for analyses two weeks prepartum, 12 hour prepartum and 12 hour postpartum and one week postpartum.

An increase in serum Ca and P prior to parturition, greater than when one and two million units vitamin D were fed previously, was nullified within 12 hour postpartum or before the usual time for milk fever to occur, the time averaging $21{\cdot}7 \pm 7{\cdot}1$ hour postpartum in 36 cases. The upward trend of serum Mg at parturition was similar to changes previously observed. Four of the nine vitamin D-fed cows and three of the controls developed milk fever.

The vitamin D content of the blood of the experimental cows was about ten times higher than that of the control cows.

Data are presented showing that milk-fever cows secrete no more colostrum than healthy newly-calved cows, nor does their colostrum have a higher percentage of ash or Ca. The average time between the first treatment and the relapse, when one occurred, was approximately the same as that between parturition and the first attack. These observations are considered evidence that milk fever is primarily caused by the failure of the blood Ca regulatory mechanism (probably the parathyroid glands) to mobilize blood Ca rapidly enough to meet even the normal drain on blood Ca at parturition. Thus recovery is characterized by the return to normal of the blood Ca regulatory mechanism and may or may not be influenced by the injected Ca which serves to eliminate the symptoms by elevating the blood Ca.

The failure of prolonged vitamin D feeding to prevent milk fever may have been due, to the suppression of the cow's parathyroid activity, or the dosage may have been too low.

AGNEW, L. R. C. (1951). **Renal lesions in pyridoxin-deficient rats.**—*J. Path. Bact.* **63,** 699-705. **2169**

Kidney lesions following haematuria in pyridoxine-deficient hooded rats are described and the probable mechanism of production is examined. Albino rats, though having similarly increased heart and kidney weights, had neither significant haematuria nor kidney lesions.

—P. H. HERBERT.

SMITH, S. E., KOCH, B. A. & TURK, K. L. (1951). **The response of cobalt-deficient lambs to liver extract and vitamin B_{12}.**—*J. Nutrit.* **44,** 455-464. [Authors' summary copied *verbatim.*] **2170**

The curative activity of an antipernicious anemia liver extract when injected into cobalt deficient lambs has been confirmed. Separation of this liver extract into 24 fractions by the counter-current distribution technic concentrated the active principle in fractions 12 to 18 inclusive. There was a high correlation between the vitamin B_{12} activity of these liver extract fractions and the appetite, weight, and hemoglobin responses in cobalt-deficient lambs, which led to a re-evaluation of the curative effects of pure vitamin B_{12}. When large enough doses, 150 μg. or more, of B_{12} were injected, the cobalt-deficient lambs responded favorably in appetite, body weight, and hemoglobin levels.

The presently available data show that vitamin B_{12} is an important intermediary in cobalt metabolism in sheep.

WAHLSTROM, R. C. & JOHNSON, B. C. (1951). **Effect of cortisone and of aureomycin on baby pigs fed a vitamin B_{12} deficient diet.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 112-114. [Authors' summary slightly modified.] **2171**

A vitamin B_{12} deficiency has been produced in baby pigs fed an alpha-protein "synthetic milk" diet [Neumann *et al* (1950),] The addition of aureomycin to this diet, either before or after the deficiency state existed, did not give a beneficial response. The injection of 20 mg. of cortisone daily into vitamin B_{12}-deficient pigs enhanced the deficiency state.

HOVE, E. L. & HARDIN, J. O. (1951). **Effect of vitamins E, B_{12} and folacin on CCL_4 toxicity and protein utilization in rats.**—*Proc. Soc. exp. Biol. Med.* **77**, 502-505. [Authors' summary slightly modified.] 2172

Vitamin E and vitamin B_{12} can replace each other in promoting protein utilization and in protecting against acute carbon tetrachloride [CCl_4] toxicity in young rats reared on 10% protein diets deficient in these factors. The vitamin B_{12} requirement for protection against CCl_4 is considerably higher than for growth. Folacin supplements, alone, had no effect, but, in the presence of vitamin B_{12} or vitamin E, this factor markedly improved protein utilization and growth. L-Cystine protected against the acute toxicity but a synergism between cystine and vitamin E was not noted.

LESBOUYRIES, G. (1951). Nutrition et reproduction des mammifères domestiques. [**Nutrition and fertility in livestock.**]—*Rec. Méd. vét.* **127**, 855-885. 2173

This is mainly a review of the literature dealing with nutritional disorders. The most commonly observed disturbances—deficiency of iodine, vitamins A and D, calcium, phosphorus and protein—are discussed and there are notes on the utilization of nutrients.

—CHARLOTTE M. WOOD.

IRWIN, C. F. P. & PULSFORD, M. F. (1951). **Enzootic myoglobinuria in a horse.**—*Aust. vet. J.* **27**, 101-102. 2174

A two-year-old pony, on a rye grass and subterranean clover pasture, was found down and unable to rise. Red urine, oedema of the belly wall, and hardness of the outer muscles of the leg were observed. Other symptoms were extreme thirst and knuckling of the fetlocks proceeding to complete flaccid paralysis of the hind legs. The animal refused to eat or drink and died on the sixth day of illness.

At P.M. examination there were severe degenerative changes of the gluteal and quadriceps muscles, infarcts in the kidneys and extensive focal necrosis of the liver. A similar case had been observed previously.

Although a diagnosis of myoglobinuria was made there appears to have been no examination of the nature of the red pigment in the urine.—D. C. BLOOD.

DUFF, G. L. & MCMILLAN, G. C. (1949). **The effect of alloxan diabetes on experimental cholesterol atherosclerosis in the rabbit. I. The inhibition of experimental cholesterol atherosclerosis in alloxan diabetes. II. The effect of alloxan diabetes on the retrogression of experimental cholesterol atherosclerosis.**—*J. exp. Med.* **89**, 611-630. 2175

Atherosclerosis of aorta caused by cholesterol is more severe in non-diabetic rabbits than in those with experimental alloxan diabetes, which also have little deposition of lipoids in liver, spleen and adrenal glands. Hypercholesterolaemia is not the sole factor producing the atherosclerosis, and the inhibition in diabetic animals is caused by interference with lipoid deposition. There is no direct application to the arterial disease in human beings.

—F. R. HARRIS.

GYÖRGY, P., STOKES, J., JR., GOLDBLATT, H. & POPPER, H. (1951). **Antimicrobial agents in the prevention of dietary hepatic injury (necrosis, cirrhosis) in rats.**—*J. exp. Med.* **93**, 513-522. [Authors' summary slightly modified.] 2176

The effect of various antimicrobial agents, such as aureomycin, terramycin, streptomycin, chloromycetin, penicillin, polymyxin, and sulfaguanidine on the development of massive dietary necrosis of the liver in rats has been studied. Delay in the production of hepatic necrosis was obtained from aureomycin and, to a lesser extent, from terramycin and streptomycin. Indication of temporary protection was shown by sulfaguanidine, whereas chloromycetin, polymyxin, and penicillin were not protective.

B_{12}, added alone, or in combination with aureomycin, to the basal experimental diet had no influence on the development of hepatic necrosis. A combination of pectin with streptomycin enhanced the protective effect of the antibiotic. All the antimicrobial agents tested, without relation to their effect on hepatic necrosis, produced temporary stimulation of growth in the experimental animals. The beneficial effect of aureomycin was not limited to the delay of hepatic necrosis but manifested itself also in the prevention of hepatic cirrhosis in rats fed a low protein (casein)-high fat diet. In contrast to control animals having the usual combination of cirrhosis and renal changes, the rats given supplements of aureomycin were free of both cirrhosis and renal changes; they ate more food and gained weight. No microscopic

alterations were seen in the pancreas of the control rats with cirrhosis. In both groups of experiments (necrosis and cirrhosis) the antimicrobial agents, with the exception of penicillin, were given mixed with the food. Their possible effect on the intestinal flora was discussed.

ABELL, M. R. & BEVERIDGE, J. M. R. (1951). **Hepatic necrosis induced by dietary means. III. The effect of various dietary modifications on the liver lipid fractions and on the development of necrosis.**—*Arch. Path.* **52,** 423-427. [Authors' summary modified.] **2177**

Groups of 20 male rats were fed a basal necrogenic diet, low in the sulphur-containing amino acids and in α-tocopherol, to which were added supplements designed to prevent liver necrosis and/or alter the level of liver lipoids. These supplements consisted of cystine, choline chloride, α-tocopherol, α-tocopherol quinone, and crystalline vitamins A and D in place of cod-liver oil.

Liver samples were analyzed and the results indicated that fatty infiltration occurred during the prenecrotic period and that choline chloride at a level of 0·625% of the diet only partially prevented this accumulation of fat in the liver. There was no correlation between liver lipoid levels and the development of massive liver necrosis.

See also absts. **2078** (vitamin A and Newcastle disease); **2202** (thiamine shock); **2203** (toxicity of vitamin B_{12}); **2206** (use of thiamine in *Equisetum* poisoning); **2210-2211** (bracken "poisoning"); **2298-2299** (antibiotics and liver extract for unweaned piglets); **2308-2313** (reports, India); **2318** (book, vitamin B complex); **2319** (book, animal nutrition).

DISEASES, GENERAL

MORNET, P. (1951). Prophylaxie des facteurs principaux de la morbidité. **[Prevention of the more important diseases of animals in French West Africa.]**—*Bull. Ser. Élev. Industr. anim. A.O.F.* **4,** 31-63. Discussion pp. 64-65. **2178**

At a conference on animal husbandry held at Bamako, French Sudan, a discussion took place on the main diseases met with and the methods of their control. Preventive measures were considered under the headings, agricultural, economic, sanitary and medical. The main diseases dealt with were rinderpest, bovine contagious pleuro-pneumonia, parasitic conditions (internal and external) and trypanosomiasis.—D. S. RABAGLIATI.

KING, A. S. (1949). **Studies on equine purpura haemorrhagica. III. Morbid anatomy and histology.**—*Brit. Vet. J.* **105,** 35-54. [Abst. from abst. in *Vet. Rec.* **61,** 403-404. (1949), Signed: E.C.] [For previous parts, see *V.B.* **19,** 3010 and **22,** 1815.] **2179**

An account of purpura in five horses, the condition described not being typical in all instances. In three cases there were histological lesions in the kidneys, which in one case, at any rate, resembled those found in the human kidney in cases of the "crush syndrome"; however, the examination of blood and urine samples from two other horses during life gave no evidence of renal failure. In the skeletal muscles of four of the horses there were scattered reddish-black areas of degeneration and haemorrhage, which were numerous in four of the animals; histological examination suggested that the muscle lesions passed through stages of hyaline degeneration, fragmentation, interstitial haemorrhage, removal of débris by macrophages, and repair by fibrosis. A comparison is drawn between these muscle lesions and those seen, for example, in fatal cases of pneumonia secondary to influenza in man.

The findings were discussed at length, and it was suggested that, in equine purpura haemorrhagica, the main factor in the pathogenesis is probably damage to capillary endothelium resulting in widespread oedema, haemorrhage occurring secondarily and to a variable extent.

KAWASHIMA, H. (1949). **[Pneumonia in goats.]**—*J. Jap. vet. med. Ass.* **2,** No. 4. pp, 6-10. **2180**

Infectious pneumonia broke out among about 1,600 goats imported from the U.S.A. into Japan in 1947 and 1948. It was transmitted to indigenous goats and was recorded as the first enzootic outbreak in Japan. It is indentical with the shipping fever in America, but its causation is unknown.—S. SAKASEGAWA.

I. LESBOUYRIES, G. & DRIEUX, H. (1951). Ostéodystrophie fibreuse du porc. **[Osteofibrosis in the pig.]**—*Rec. Méd. vét.* **127,** 579-585. **2181**

II. LESBOUYRIES, G. & DRIEUX, H. (1951). Ostéodystrophie fibreuse de la chèvre. **[Osteofibrosis in the goat.]**—*Ibid.* 586-592. **2182**

III. GROULADE, P., THIÉRY, G. & DRIEUX, H. (1951). Ostéodystrophie fibreuse du chat. **[Osteofibrosis in the cat.]** — *Ibid.* 596-605. **2183**

I. In the pig the authors recognize two forms, the hyper- and hypo-osteotic which are essentially the same, but differ in the capacity of the metaplastic fibrous tissue for exuberant

proliferation. The histology of the hyperosteotic form is described in detail. In essence it is a non inflammatory process characterised by resorption of bone by osteolysis with or without osteoclasis, and its replacement by apparently ordinary fibrous connective tissue.

II. The condition in the goat differs from that in the pig in that, in the depths of the lesion the bone cells liberated by osteolysis assume the form of young fibroblasts and arrange themselves in a layer parallel to the periosteum. Furthermore there is a greater diversity in the forms which the medullary tissue in the resorption zone may assume.

III. An account of the history, symptoms, morbid anatomy and histopathology of a case of osteodystrophia, apparently a very rare condition in the cat.—J. T. Done.

Barei, S. & Binaghi, C. (1951). La cosidetta "malattia degli edemi" del suino. [**Oedema disease of pigs.**]—*Clin. Vet., Milano.* **74,** 309-314. **2184**

Within the last year numerous outbreaks of oedema disease of pigs have been seen. Histological examination of the central nervous system gave no evidence of the existence of virus-type encephalomyelitis. The most effective treatments have been the administration of saline purgatives and the use of frequent cold water baths combined with restriction of the diet.

The authors suggested analogies with Quincke's disease, a form of angio-neurotic oedema of man.

[This, the first report of oedema disease in Italy, recalls earlier Italian reports claiming either that oedema of the stomach wall is of importance in the differentiation of Teschen disease from swine fever, (*V.B.* **22,** 1340) or that it occurs in an infectious encephalomyelitis distinct from both swine fever and Teschen disease (*V.B.* **21,** 742).]—J. T. Done.

Ceccarelli, A. (1948). Ulteriori ricerche sulla eziologia di una linfoadenite trasmissibile dei suinetti. [**Aetiology of a transmissible lymphadenitis of piglets.**]—*G. Batt. Immun.* **39,** 193-202. [English, French and German summaries.] **2185**

By injection of unfiltered material from the precrural lymph nodes of a piglet affected with this condition [see also *V.B.* **22,** 1823] C. was able to set up similar histological and haematological changes in g. pigs up to the third passage.

In one of the g. pigs which had died 46 days after infection there was emaciation with lymphocytosis, enlargement of subsutaneous lymph nodes, and of the kidneys and spleen; the liver was studded with white areas and the bone marrow was very dark in colour. Microscopic and cultural tests for bacteria were negative. Further attempts at passage using g. pigs failed. C. stated that failure to set up the disease by filtrate inoculation does not exclude the possibility of a live causative agent.

—I. W. Jennings.

Bodansky, O. (1951). **Methemoglobinemia and methemoglobin - producing compounds.** — *Pharmacol. Rev.* **3,** 144-196. **2186**

This discussion is directed towards the correlation of available information concerning the chemistry of methaemoglobin, the biochemical relationships between haemoglobin and methaemoglobin, the extent and nature of physiological impairments produced by methaemoglobinaemia, the description of the substances which form methaemoglobin and the mechanisms by which they do so, and finally the principles and methods to be followed in the treatment of methaemoglobinaemia.

Each section is dealt with in detail and there are six tables of analytical findings in the text.—E.M.J.

Horányi, M. (1951). **Studies on the retraction of the blood clot.**—*Acta med. scand.* **140,** 140-148. [In English. Abst. from author's summary.] **2187**

On coagulation *in vitro* some of the platelets produce thrombin and disintegrate, others remain intact and form the fibrin necessary to retraction. In the microscopic pictures of clots containing platelets, there is a gathering together of the platelets and fibrin at the periphery. In plasma without platelets on the other hand, the fibrin is distributed uniformly. The platelets attach the elastic fibres to the edges in a stretched condition; cessation of this adherence induces retraction. In thrombopenia and diseases characterized by disturbances of platelet formation, these processes fail to develop owing to either an insufficient number, or increased fragility, of platelets and all of them are destroyed during the clotting process.

Frings, H. & Frings, M. (1951). **Otitis media and audiogenic seizures in mice.**—*Science.* **113,** 689-690. **2188**

Audiogenic seizures were successfully induced in mice of three strains (including a commercially-obtained mongrel albino, or so-called "Swiss") by subjecting them to a sound field at a frequency of 10 kilocycles per sec. and 110 decibels average sound pressure, tests being made daily from 15 to 50 days of age. At the conclusion of the tests P.M. examinations were

carried out on (1) mice that had not developed seizures at any time during the test period or had developed them during the early period (20–30 days) only; and (2) mice that had died as the result of clonic-tonic seizures, usually between 20–30 days. No case of otitis media was encountered in 1) and one case only in (2).

It is concluded therefore that so far as mice are concerned otitis media is not a prerequisite for susceptibility to audiogenic siezures. It is suggested further that the low incidence of the disease in mouse colonies makes it negligible as a complication in studies on auditory reactions.—ALASTAIR N. WORDEN.

MANDEL, E. E. & POPPER, H. (1951). **Experimental medullary necrosis of the kidney. A morphologic and functional study.**—*Arch. Path.* **52,** 1-17. 2189

A description is given of the renal lesions produced by vinylamine administration in rabbits and a dog. The changes in stage 1 (cortical ischaemia, medullary hyperaemia, early degeneration of convoluted tubule epithelium) suggested a shunt of the renal blood flow. In stage 2, ischaemic medullary necrosis developed, demarcated above by a zone of engorged and thrombosed blood vessels, oedema, and haemorrhages, and later by leucocytic infiltration. The necrosis could be attributed in part to tissue anoxia arising from excessive medullary hyperaemia, prolonged vasoparalysis and formation of conglutination thrombi. In stage 3, scarring of the necrotic medulla developed, with secondary dilatation of cortical tubules. Functionally, there was at first azotaemia and proteinuria, reflecting the upper nephron lesion, and hyposthenuria due to lower nephron damage. Later, there was hyposthenuria, polyuria and abnormal back-diffusion of nitrogenous substances through inert tubular membranes.—E. COTCHIN.

VOISON, G., DELAUNAY, A. & BARBER, M. (1951). Lésions testiculaires provoquées chez le cobaye par injection d'extraits de testicules homologues. **[Testicular lesions in g. pigs produced by injections of homologous testicular extracts.]**—*C. R. Acad. Sci., Paris.* **232,** 1264-1266. 2190

Subcutaneous injection of a g. pig with homologous testicular extract produced slight testicular lesions and no general disturbance. Injection of a preparation containing the extract, a proprietary lanolin-like substance, liquid paraffin and powdered bovine type tubercle bacilli, rapidly caused severe, progressive lesions and general disturbance.

—W. R. BETT.

DEL CONTE, E. (1949). Contribución del coeficiente citológico á la fisiólogía y patología de la correlación hipofisotiroidea. **[The cytological coefficient as a means of determining the physiology and pathology of the relationship between the pituitary and thyroid glands.]** pp. 87. Buenos Aires: Librería y Editorial el Ateneo. 2191

The book is divided into three parts, dealing with Altmann's method of fixation for the cytological examination of the thyroid, the cytological coefficient as an index of the activity of the thyroid, and with the cytological coefficient for the assay of thyrotropic substances in the tissues of organs. The observations were made on g. pigs and on rats from which the pituitary gland had been removed. A selective bibliography is given; there are 34 photographic figures on 16 plates.—I. W. JENNINGS.

GRAY, A. (1951). **Dermatology from the time of Harvey.**—*Lancet.* **261,** 795-802. 2192

In this Harveian Oration, G. briefly reviewed dermatology in the time of Harvey, discussed the work of Daniel Turner, the first English dermatologist, Robert Willan's nomenclature and classification, and Ferdinand von Hebra's work on experimental dermatology. He concluded with mention of changes in treatment.—W. R. BETT.

MILLER, C. P., HAMMOND, C. W. & TOMPKINS, M. (1951). **The role of infection in radiation injury.**—*J. Lab. clin. Med.* **38,** 331-343. [Authors' summary slightly modified.] 2193

Male white mice averaging 20 g. in weight were subjected to 600 or 450 r. total body X-radiation in a single exposure.

In the 600 r. series, 288 mice were killed and cultured (at the rate of 20 a day). Of these, 113 showed positive cultures from heart's blood and/or spleen. 80% of the positive cultures occurred during the second week post-irradiation, the period of greatest mortality.

In the 450 r. series 595 mice were killed and cultured (at the rate of 35 a day). 152 gave positive cultures from heart's blood and/or spleen. 66% of the positive cultures occurred during the second week post-irradiation.

In a majority of the animals the bacteremia was severe enough to be regarded as an overwhelming sepsis. The bacteremia was caused by micro-organisms normally present in the lower bowel of this strain of mice. Control cultures on unirradiated mice were all sterile.

It is concluded that septicemia caused by micro-organisms of enteric origin is in large measure responsible for the death in mice irradiated with these doses of X-ray.

MAYNEORD, W. V. (1952). **Radiography of the human body with radioactive isotopes.**—*Lancet.* **262,** 276-278. [Part of author's summary copied *verbatim.*] **2194**

Preliminary work suggests that, if sources of sufficient activity can be obtained, radioactive isotopes emitting low-energy gamma rays will be of use in diagnostic radiology. Satisfactory photographs have been taken with thulium 170, but long exposures are at present necessary. In associated fields of medicine they already provide many new opportunities.

See also absts. **2157** ("lamkruis"); **2174** (enzootic myoglobinuria in a horse); **2320** (book, internal diseases of the horse); **2321** (book, foetal and neonatal pathology); **2322** (book, patterns of disease); **2325** (book, blood clotting).

POISONS AND POISONING

CUNNINGHAM, I. J. (1946). **The toxicity of copper to bovines.**—*N.Z. J. Sci. Tech.* Sect. A. **27,** No. 5. 372-376. **2195**

Experiments were designed to determine the doses of copper which would produce acute and chronic poisoning in cattle. In attempts to produce chronic poisoning, 0·8–5 g. of copper sulphate were fed daily for nine months or longer without producing harmful effects.

Studying acute poisoning it was found that yearling heifers and adult cows tolerated repeated doses of 20–40 g. and single doses of up to 100 g. The lethal dose lay between 200 g. and 400 g.

Blood examination was of uncertain value in diagnosis of copper poisoning. The copper content of the liver was of value in diagnosis of chronic and subacute, but not always of acute poisoning.—M.C.

HESSE, E. & FLÖTER, W. (1951). Ueber die Behandlung der Bleivergiftung mit Folsäure. **[The treatment of lead poisoning with folic acid.]**—*Klin. Wschr.* **29,** 232-233. [Abst. from abst. in *Bull. Hyg., Lond.* **26,** 913. (1951). **2196**

Folic acid, but not vitamin B_{12}, given subcutaneously, protected rabbits against six times the lethal dose in experimental lead poisoning. Two human male hospital patients with lead poisoning responded to treatment with 15 mg. folic acid per day; the first was discharged after receiving a total dosage of 120 mg. folic acid and the second, a more serious case in which the lead line on the gums was marked, was discharged after receiving a total of 225 mg. folic acid.—K. J. SINCLAIR.

BROMILEY, R. B. & BARD, P. (1949). **Tremor and changes in reflex status produced by DDT in decerebrate, decerebrate-decerebellate and spinal animals.**—*Johns Hopk. Hosp. Bull.* **84,** 414-429. **2197**

Details were given of D.D.T. administered by stomach tube or intravenously into dogs and cats which had undergone various operations on the C.N.S. and spinal cord. Forebrain, mesencephalon and cerebellum are not necessary for the development of the tremor characteristic of the intact animal poisoned by D.D.T., but no conclusions could be drawn as to the site or sites of action of D.D.T.,—C.M.S.

ENZIE, F. D. & FOSTER, A. O. (1951). **The use of calcium gluconate in the treatment of lindane poisoning of dogs.**—*Vet. Med.* **46,** 439-442 & 450. [Authors' summary copied *verbatim.*] **2198**

Two dogs afflicted with demodectic mange developed symptoms of acute poisoning following treatment with preparations containing 0·5% lindane [γ-benzene hexachloride] in water and mineral oil, respectively. With the aqueous emulsion, applied by wash to the entire body surface, toxic symptoms were manifested within one hour; but with the mineral oil preparation, applied to only half of the body surface, toxicity was not observed until approximately 27 hours after treatment. Both animals recovered completely following several intraperitoneal injections of a calcium gluconate preparation.

GEISSLER, H. (1951). Ueber Schäden im Anschluss an die Verwendung von Hexachlorcyclohexan-Präparaten und über die Vermeidung solcher Schäden. **[Toxicity of benzene hexachloride in animals and its injurious effects on meat and milk.]**—*Dtsch. tierärztl. Wschr.* **58,** 97-98. **2199**

The dusting of hens and strewing of the floor with commercial benzene hexachloride preparations, may cause gross damage to the intestinal tract, and may be lethal to young chicks. The lethal dose for birds of various ages has not been determined. There is no impairment of central nervous system function in hens. The eggs and meat may taste strongly of the chemical. The preparations should be used with great caution, avoiding contamination of food and drink. They should not be used during the laying period or within 14 days of killing for the table. Lethal doses for other animals are quoted.—N. DEAN.

BALL, H. J. & BECK, S. D. (1951). **The role of the circulatory and nervous systems in the**

toxic action of parathion.—*J. econ. Ent.* **44,** 558-564. [Authors' summary copied *verbatim.*] 2200

Sectioning of the ventral nerve cord at various intervals of time following treatment with parathion [*o*-diethyl-*o*-*p*-nitrophenyl thiophosphate] indicated that the ventral nerve cord was involved in the transport of parathion, and that the knockdown time decreased as the time between treatment and nerve tissue removal increased. The relative capacity of several tissues in the American roach [*Periplaneta americana*] to absorb parathion *in vivo* following topical applications were determined microanalytically. Parabiotic connections between two roaches were made with the blood as the only tissue contact. Parathion applied topically to one insect was detectable in the other roach at knockdown. This gave final proof that the blood was one mechanism for the translocation of parathion. Both the central nervous system and the blood were active in translocating parathion in the insect body. The ventral nerve cord remained more effective in translocating the toxic principle of parathion, probably some toxic metabolite. Such metabolites may be the toxic agents which cause the death of insects. The blood assumed a secondary role in translocation.

METCALF, R. L. (1951). **The colorimetric microestimation of human blood cholinesterases and its application to poisoning by organic phosphate insecticides.**—*J. econ. Ent.* **44,** 883-890. [Author's summary and conclusions copied *verbatim.*] 2201

A colorimetric method for the determination of human plasma and red cell cholinesterases on finger puncture blood has been developed. This method is rapid and highly precise and can be used with as little as 1 microliter [a thousandth part of one ml.—Ed. *V.B.*] of plasma. The conditions for its satisfactory performance are outlined in detail, and values are presented for expected normal variations in a single subject and in a group of human males.

This method is being routinely used to detect possible dangerous levels of over-exposure to organic phosphate insecticides by a group of experimental workers, and a summary of the various types of these anticholinesterases which may be encountered and their effects on blood cholinesterase is presented. It is suggested that the method may also be of value in clinical determinations of possible over-dosages in patients undergoing anticholinesterase therapy for nervous disorders; in experimental pharmacological studies with small laboratory animals; and in the possible determination of dangerous over-exposures among troops and civilians subjected to the effects of anticholinesterase war gases.

MOURIQUAND, G., EDEL, V. & CHIGHIZOLA, R. (1951). Sur le choc vitaminique par l'aneurine. **[Shock caused by injection of thiamine.]** —*C.R. Soc. Biol., Paris.* **145,** 1192-1193. 2202

In pigeons, intravenous injection of thiamine is fatal, intramuscularly it produces coma, but is not fatal; *via* the digestive tract it is almost without effect.—F. R. HARRIS.

ANON. (1950). **Toxicity of vitamin B_{12}.**—*Nutr. Rev.* **8,** 324-325. 2203

Of ten mice given 0·7 mg. per kg. vitamin B_{12} intraperitoneally, all survived. In a similar group given 1·5 mg. per kg. intraperitoneally, two died. In two groups each of ten mice given 3 mg. per kg. intraperitoneally and subcutaneously respectively, all animals died following convulsions and cardiac and respiratory failure. No signs of hypersensitivity were observed in 12 g. pigs given several small injections followed by a test injection. Possible reasons for the toxicity of the vitamin were discussed.—C.M.S.

JOCKOVIĆ, M. & DAVIDOVIĆ, B. (1951). **[*Stachys annua* (Labiatae) poisoning in horses.]**—*Vet. Glasnik.* **5,** 454-457. [Abst. from German summary.] 2204

Poisoning in horses by *Stachys annua* (woundwort) was characterized by motor hypersensitivity, weakness of the legs and haematuria. Convalescence occupied 2–8 weeks, and no fatalities occurred. Cows did not appear to be susceptible.—F. R. HARRIS.

LAPČEVIĆ, E. M. & JAKŠIĆ, B. L., (1951). **[*Aristolochia clematitis* poisoning in horses.]** —*Vet. Glasnik.* **5,** 418-429. [Abst. from German summary.] 2205

Poisoning in horses by *Aristolochia clematitis* was characterized by tachycardia, weak pulse, lowering of heart tonus, decreased appetite, constipation, polyuria, acute inflammation of the urogenital tract, and neutrophile leucocytosis.—F. R. HARRIS.

LOTT, D. G. (1951). **The use of thiamin in mare's tail [*Equisetum*] poisoning of horses.** —*Canad. J. comp. Med.* **15,** 274-276. [Author's summary copied *verbatim.*] 2206

A description is given of bracken [*Pteridium latinusculum*] and mare's tail [*E. arvense*] poisoning in horses. A series of seven cases in horses and one in a calf treated with large doses of thiamin hydochloride intravenously is described, with rapid recovery in all but one case.

Bell, A. T. & Everist, S. L. (1951). *Indigofera enneaphylla*: **A plant toxic to horses (Birdsville disease).**—*Aust. vet. J.* **27,** 185-188. 2207

The plant *Indigofera enneaphylla* was suspected as the causal agent of Birdsville disease of horses after botanical surveys of pastures when heavy losses were occurring. It grows commonly in the tropical and sub-tropical parts of Australia and is reported in the northern parts of Western Australia, Northern Territory and in Queensland. Probably the area in which the disease occurs is restricted by the dominance of the plant in the pasture. Thus the disease is likely to occur only in those areas and at such times as *I. enneaphylla* provides a fairly large proportion of available forage.—D. C. Blood.

Rose, A. L., Banks, A. W. & McConnell, J. D. (1951). **Birdsville disease in the Northern Territory.**—*Aust. vet. J.* **27,** 189-196. 2208

Birdsville disease has been observed in the drier central parts of Australia, which have a rainfall of 6–14 in. a year during a rainy season lasting from November until March. The disease is commonest soon after rain and appears to be associated with the dominance of *Indigofera enneaphylla* in the pasture. Only horses are affected and feeding trials with the fresh plant resulted in the appearance of clinical symptoms in the experimental horses. A series of experiments indicated that a daily consumption of 10 lb. of fresh plant per day for at least two weeks is necessary for the production of symptoms. Attention is drawn to the differences between this disease and Walkabout or Kimberley horse disease. Gross changes were not apparent at autopsy in nineteen cases and microscopic examination has not yet been completed. Some chemical work was carried out to examine pyruvic acid levels of the blood, but these remained normal. The daily injection of 150 mg. of thiamine failed to prevent the onset of the disease in two horses.—D. C. Blood.

O'Connor, J. G. (1951). **Sugar beet poisoning?** —*Irish vet. J.* **5,** 259-260. 2209

A description is given of the symptoms and treatment of poisoning in cows which had eaten sugar beet ready to dispatch to the factory from a clamp. No sugar beet tops were eaten.

The main symptom was difficulty in rising. The milk yield dropped to practically *nil*. All recovered and were normal after about a week. —G. Davies.

Moon, F. E. & Raafat, M. A. (1951). **Some biochemical aspects of bracken 'poisoning' in the ruminant animal. I. Vitamin factors.**—*J. Sci. Food & Agric.* **3,** pp. 228-240. [Authors' summary slightly modified.] 2210

Moon, F. E. & Raafat, M. A. (1951). **Some biochemical aspects of bracken 'poisoning' in the ruminant animal. II. The significance of the cyanogenetic principle of bracken.**—*J. Sci. Food & Agric.* No. 7. pp. 327-336. [Authors' summary copied *verbatim*.] 2211

I. An examination was made of the significance of several vitamin factors in the production of bracken 'poisoning' in ruminants. Bracken feeding led to a rapid cessation of urinary vitamin-B_1 excretion but this was not associated with any consistent increase in pyruvic acid excretion or in blood pyruvic acid concentration. Injections of vitamin B_1 given to ruminants with symptoms of bracken 'poisoning' did not produce any recovery. Although bracken-fed ruminants probably have a lack of vitamin B_1, no evidence was obtained of any acute deficiency.

Measurements of blood prothrombin time suggested that no deficiency of vitamin K is involved in the production of this disease, but low body reserves of vitamins A and C were found in experimental sheep which had died with bracken 'poisoning'.

II. Determinations have been made of the amounts of HCN in bracken at various stages of maturity and of the apparent retention of cyanide by animals fed on fresh bracken, dried bracken and hay plus sodium cyanide.

Newly emerging bracken shoots contained up to 50 mg. HCN per 100 g. dry matter but the mean value for early-summer bracken (18 June to 16 July) was only 3·35 mg. per 100 g. dry matter and that for early-autumn plants (18 Aug. to 27 Sept.) only 1·81 mg. per 100 g. A young second-growth in October contained an average of 7·35 mg. per 100 g. There were considerable day-to-day fluctuations in the HCN content of bracken.

As it was difficult to arrive at valid figures for normal urinary cyanide and thiocyanate no attempt was made to correct the urinary excretion values obtained for braken-fed animals but the apparent retention of HCN was nevertheless high in nearly all cases. HCN destroyed in the digestive tract or excreted through the lungs could not be measured, these fractions being included in the figures for apparent retention; the high apparent retention of HCN by bracken-fed animals is therefore not regarded as sufficient evidence to indicate the cyanogenetic principle as a causative factor in ruminant bracken 'poisoning'. The relatively

low HCN content of bracken during most of the season, the insignificant amounts of cyanide found in the liver and rumen contents of bracken 'poisoned' animals and the failure of thiosulphate injections to promote recovery suggest that danger arising from the cyanogenetic principle of bracken is likely to be slight. The administration of sodium cyanide did not lead to any increase in the combined urinary excretion of cyanide and thiocyanate, indicating a difference from the metabolism of the cyanogenetic principle of bracken.

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

ANON. (1952). **The British Pharmaceutical Codex 1949. Supplement 1952.** pp. xii + 148. London: The Pharmaceutical Press. 25s. 2212

The Codex Revision Committee, reappointed by the Council of the Pharmaceutical Society of Great Britain in February 1950, to amend and revise the British Pharmaceutical Codex, 1949, prepared this Supplement, to include monographs on drugs recently introduced into medicine for which clinical evidence of efficacy was considered adequate, but which were not included in the British Pharmacopoeia, the British Pharmaceutical Codex or in the Addendum to the British Pharmacopoeia. There are Additions and Amendments to:—Part I General Monographs; Part II Antisera, Vaccines and Related Substances; Part III Preparations of Human Blood; Part IV Surgical Ligatures and Sutures; Part V Surgical Dressings; Part VI Formulary; Part VII Appendices and there is an Index.—E.M.J.

EAGLE, H. & DOOK, G. O. (1951). **The biological activity of arsenosobenzenes in relation to their structure.**—*Pharmacol. Rev.* 3, 107-143. 2213

Of the three types of organic compounds containing arsenic (a) the pentavalent arsonic acids ($R\ AsO_3H_2$), (b) the arseno compounds ($R-As=AsR$), and (c) the arsenoso compounds ($R\ As\ O$), successfully used in the treatment of spirochaetal and protozoan diseases, only the arsenoso compounds have a direct parasiticidal activity, the other two types being active *in vivo* after conversion to arsenoso compounds. Unsubstituted arsenosobenzene one of the most toxic and most actively parasiticidal compounds tested was without selective action on the organisms studied. Substitution within the molecule with various groups was discussed, especially in regard to the parasiticidal and toxic effects. These latter properties of arsenoso compounds, appear to be determined by the amounts which enter into combination with cellular components, *e.g.* the sulphydryl groups in essential enzyme proteins. Such enzymes can be inactivated by arsenoso compounds.

—E.M.J.

PETERS, R. A. (1951). **Applications of chemical defence research in medicine.**—*Edinb. med. J.* 58, 197-213. 2214

Research into war gases and their antidotes indicated the importance of the biochemical changes which precede the pathological in a tissue under assault: *e.g.* arsenical compounds and the action of British anti-Lewisite, the mustard gases, diisopropyl fluorophosphonate (DFP) and fluoroacetate were discussed. In the case of arsenical poisoning the attack is made on the pyruvate oxidase system. B.A.L. can remove the arsenic from the pyruvate oxidase system after it has been poisoned by lewisite.

In general these toxic and therapeutic effects are concerned in one way or another with cell enzymes.—JOHN SEAMER.

LILJESTRAND, G. (1951). **The action of certain drugs on respiration.**—*Brit. med. J.* Sept. 15th, 623-627. 2215

The physiology of the carotid and aortic bodies including the stimulation of the chemoreceptors of these bodies by lack of oxygen or excess carbon dioxide which induces increased breathing and the effect of cyanides, lobeline, [a mixture of alkaloids obtained from lobelia], adrenalin and acetyl-choline upon them are discussed. Acetyl-choline is probably the chemical mediator of the carotid body.—JOHN SEAMER.

ROBERTS, S. J. (1951). **An evaluation of hyaluronidase in large animal therapy.**—*Cornell Vet.* 41, 321-331. [Abst. from author's summary.] 2216

Hyaluronidase combined with udder infusions used for the cure of mastitis caused no observable reaction in normal or diseased bovine udders and did not improve the results of treatment of acute or chronic mastitis. It increased the rate of diffusion of calcium gluconate solutions injected subcutaneously in cows but did not increase the rate of absorption. It increased the irritating effect of a solution containing chloral hydrate and magnesium sulphate injected subcutaneously. It may be used advantageously in large animal therapy in deep nerve block and in deep infiltrating local anaesthesia; a more uniform anaesthesia is produced

than with anaesthetics without hyaluronidase. It is of questionable value in superficial or subcutaneous anaesthesia, and for nerve block anaesthesia where the nerves are readily located.

I. HOMPESCH, H. (1951). Über die bakterizide Wirkung des Ultraschalls und ihren Mechanismus. **[Bactericidal action of ultrasonic waves.]**—*Zbl. Bakt. I.* (*Orig.*) **157.** 130-137. Discussion pp. 138-139. 2217

II. DOLD, H. & GUST, R. (1951). Strukturzerstörungen durch Ultraschall. **[Changes in the structure of serum by ultrasonic waves.]** —*Ibid.* 140-143. Discussion pp. 143-144. 2218

I. The bactericidal power of ultrasonic waves varies with the organism, but increases with increase of pH value between 5 and 8. The effect is much decreased in suspensions containing 3% formalin, calcium or barium chloride, and by heat. It is obviously a colloid-chemical phenomenon, but the mechanism is uncertain.

II. Ultrasonic waves produce marked changes in the microscopic appearance of dried droplets of serum and in other physiological fluids.—F. R. HARRIS.

BEHRENS, H. (1951). Die intrazisternale Penicillininjektion beim Pferd. **[Injection of penicillin into the subarachnoid cisterns in the horse.]**—*Mh. Vet.-med.* **6,** 209-213. 2219

Intracisternal injections of penicillin in the horse cause considerable irritation of the central nervous system and of its membranes, indicated both by clinical manifestation and by changes in the cerebrospinal fluid. Clinical evidence of irritation disappears within 24 hours.

—W. R. BETT.

BURNELL, J. M. & KERBEY, W. M. M. (1951). **Effectiveness of a new compound, Benemid, in elevating serum penicillin concentrations.** —*J. clin. Invest.* **30,** 697-700. [Abst. from authors' summary.] 2220

The effect of oral administration of 0·5 g. of benemid [*p*-(di-n-propylsulphanyl) benzoic acid] every six hours on serum penicillin levels was measured in 74 patients. Penicillin levels were enhanced on average 2·9 times in 41 of 51 patients treated with procaine penicillin followed by benemid. The levels were on an average 5·1 times higher in 22 of 23 patients treated with crystalline penicillin followed by benemid. This three to five fold enhancement of penicillin levels should make the therapy of certain infections caused by penicillin-resistant organisms considerably cheaper and simpler from a mechanical standpoint.

WALTERS, W. (1952). **Surgical treatment of hyperfunctioning lesions of the adrenal cortex** —*Lancet.* **262,** 221-225. [Abst. from author's summary.] 2221

The development of our knowledge of the function of the adrenal cortex is in great part due to isolation and identification of potent steroid hormones, the effects of which when increased in amount have been shown to produce in animals most of the changes found in patients with hyperfunctioning lesions of the adrenal cortex. Methods of assay of urinary steroids have been developed which are helpful in differentiating between tumour and hyperplasia. The administration of adenal cortical extracts before, during, and after operation has prevented deaths from adrenal cortical insufficiency after removal of hyperfunctioning adrenal cortical tumours. Kepler postulated after intensive study that the important part is taken by the adrenal glands in Cushing's syndrome with and without basophilic adenomas of the hypophysis. Subtotal adrenalectomy has been done in this disease, with excellent remission of symptoms in a good many. Adrenal cortical insufficiency in the immediate postoperative period has been controlled by the administration of potent extracts of the adrenal cortex, and more recently by cortisone, which has alleviated the delayed symptoms in the early post-operative period.

ROGOFF, W. M. & METCALF, R. L. (1951). **Some insecticidal properties of heptachlor.**—*J. econ. Ent.* **44,** 910-918. [Abst. from authors' summary.] 2222

Heptachlor [a chlorinated hydrocarbon] is more stable to the action of alkali than chlordane or D.D.T., and is somewhat more soluble in certain organic solvents than is D.D.T. Details of its relative toxicity were given.

BRUCE, H. M. & PARKES, A. S. (1952). **A slow-release medium for adrenocorticotrophic hormone.**—*Lancet.* **262,** 71-72. [Authors' summary copied *verbatim.*] 2223

A test based on decrease of thymus weight in the rat (particularly the nestling rat) has been used to study the influence of medium on the effectiveness of A.C.T.H. [adrenocorticotrophic hormone]. Suspension of the hormone in a medium consisting of 5% beeswax in arachis oil, as at one time used for penicillin, increased the effectiveness of daily injections by ten times or more as compared with solution in saline or suspension in oil alone. Large doses of A.C.T.H. given as a single injection in the wax-oil medium produced an effect for several days.

GREWE, H. E. & KREMER, K. (1951). Mitteilung über eine intraperitoneale Narkose mit Barbitursäurederivaten bei Kleintieren. **[Intra-**

peritoneal anaesthesia in small animals with barbituric acid derivatives.]—*Berl. Münch. tierärztl. Wschr.* No. 7. pp. 129-131. 2224

Evipan (N-methyl-cyclo-hexenyl barbituric acid) and "eunarcon" were used as anaesthetics, a slightly larger dose of evipan being necesary. Female cats and dogs proved more sensitive than males. This was not the case with rabbits. Evipan caused greater excitement before and after narcosis and a quick injection was necessary. Doses in g. per kg. anaesthetic used were as follows: rabbits:—male 0·035–0·08, female 0·07–0·1; cats:—male 0·08–0·1, female 0·06–0·09; and a male dog:— 0·05–0·08 respectively.—E. WALLICZEK.

KESLER, E. M., KNODT, C. B., WATROUS, G. H., JR. & WILLIAMS, P. S. (1949). **The use of hypochlorite and quaternary ammonium compounds in the routine washing of cows' udders prior to machine milking.**—*J. Milk Food Technol.* 12, 350-353. 2225

In tests, which were described, no significant differences were found amongst the mean bacterial plate counts of milk produced under varied routine treatments using solutions of hypochlorite or quaternary ammonium compounds for washing the udders of cows.

—G. DAVIES.

ANON. (1948). **German synthetic detergents.**—*Soap & Sanit. Chem.* 24, No. 7. pp. 67 & 69. 2226

Research in the field of synthetic detergents has been very intensive in Germany during the last ten years and reviews of the subject are contained in F.I.A.T. Final Report No. 1141 and B.I.O.S. Final Reports No. 1646 and 1151, which cover 350 pages. A very brief description of the more important products, contained in the original reports, is now given. A redeposition test is described in which carbon black (lamp black) is stirred with a solution of detergent under test in the presence of a piece of white cloth.—W. MOORE.

FULTON, J. D., NICHOLS, M. E., WOEHLER, J., SHREWSBURY, C. L. & WILKINS, P. (1948). **Germicidal aerosols.**—*Soap & Sanit. Chem.* 24, No. 5. pp. 125-127, 157 & 159. 2227

The formula of a stable aerosol solution capable of destroying bacteria in air and on surfaces, but which does not corrode the container or colour surfaces was given:— dipropylene glycol 5%, cetyltrimethylammonium bromide 1%, isopropyl alcohol 9%, mineral oil 5%, and dichlorodifluoromethane 80%.—W. MOORE.

WEBER, G. R. & BLACK, L. A. (1948). **Inhibitors for neutralizing the germicidal action of quaternary ammonium compounds.**—*Soap & Sanit. Chem.* 24, No. 9. pp. 137-143 & 149-151. 2228

Certain compounds inhibited the germicidal action of quaternary ammonium compounds against *Bact. coli* after this test organism had been exposed to the germicide for varying periods of time up to three hours at room temperature, the maximum period studied. Of the materials tested, naphuride sodium in the ratio of 20 : 1 was most effective in protecting *B. coli*. Against other test organisms a higher ratio of inhibitor to quaternary ammonium compound was required.—W. MOORE.

RUCHHOFT, C. C. & NORRIS, F. I. (1951). **Evaluation of detergents. IV. A correlation of washing performance with dissolving and wetting ability.**—*Publ. Hlth Rep., Wash.* 66, 655-667. 2229

In a study of about 100 detergents single factors of detergency such as alkalinity, pH, surface tension etc. could not be correlated with washing performance. A washing performance test remains the most reliable method of evaluation of a detergent.—R. MARSHALL.

See also absts. **1941** (resistance of streptococci to *Streptomyces* antibiotics); **1945** (effect of antibiotics on *V. fetus*); **1947** (chloramphenicol for cutaneous anthrax); **1963** (streptomycin in experimental TB. in mice); **1979-1980** (sensitivity of *E. rhusiopathiae* to antibiotics); **1985-1986** (action of antibiotics on *Pasteurella*); **1988-1989** (mastitis); **2008** (brucellosis); **2011** (leptospirosis); **2024** (fungicides); **2025** (bovine contagious pleuro-pneumonia); **2031** (effect of antibiotics on *E. histolytica*); **2035-2038** trypanosomiasis); **2040-2041** (blackhead); **2244** (coccidiosis); **2047** (anaplasmosis); **2064-2065** (A.C.T.H.); **2077** (effect of mucoprotein from human urine on some viruses; **2107-2111** and **2201** (insecticides); **2115-2117**, **2120** and **2197** (D.D.T.); **2129** (phenothiazine); **2130** (cortisone in trichinosis); **2132** (husk); **2133** (lungworms); **2171** (effect of cortisone and aureomycin on vitamin B_{12} deficient piglets); **2194** (radio-active isotopes); **2199** (benzene hexachloride); **2266** and **2270** (effect of antibiotics on fertility of bull semen); **2326** (U.S. pharmacopeia); **2327** (book, selective toxicity and chemotherapy).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

TAYEB, M. A. F. (1951). La cavité buccale du chameau. [**The buccal cavity of the camel.**]—*Rev. Élev. Méd. vét. Pays trop.* 4, 157-160. 2230

T. examined the heads of seven Sudanese camels including both sexes and described the buccal cavity under the headings, lips, tongue, cheeks and palate.—D. S. RABAGLIATI.

ANDREW, W. (1951). **Age changes in the skin of Wistar Institute rats with particular reference to the epidermis.**—*Amer. J. Anat.* 89, 283-319. [Author's summary and conclusions copied *verbatim*.] 2231

Sections of skin from the back, abdomen, ear and sole-pad of the forepaw of Wistar Institute rats have been studied. The age differ-

ences in the skin of young, middle-aged, and senile Wistar Institute rats are great enough to make it possible readily to distinguish animals of these age groups by histological observations. The epidermis of young and middle-aged rats has a stratum germinativum in which the nuclei are prominent, the cytoplasm relatively inconspicuous. The nuclei are large, vesicular, and present a "crowded" aspect. There is no stratum granulosum on the ear, back, or abdomen of the young and middle-aged rats. On the paws of some of the middle-aged animals a single or double layer of basophilic cells is seen just beneath the stratum corneum, but without granules. The stratum corneum in the younger rats appears to be made up of loosely adherent lamellae. The epidermis of senile rats has a stratum germinativum in which the cytoplasm is relatively conspicuous. The nuclei are relatively smaller, more granular, and present more variety of form than in younger rats. A stratum granulosum is present and conspicuous, almost without exception, in senile skin from back, abdomen, ear and forepaw. The stratum corneum in senile rats appears to be made up of closely adherent lamellae.

There is no evidence of a consistent "atrophy" or thinning of the epidermis in old age, but the variation in thickness in a given region is greater in the senile rats. The dermis of very young animals is richly cellular as compared to that in middle-aged and senile animals. The collagenous and elastic fibers of the dermis do not show any clear-cut degeneration. The elastic network is retained in its regular form in senile rats and the elastic tissue seems generally more abundant than in middle-aged rats. Histochemical tests on the epidermis for glycogen, lipids, cholesterol, and the Dopa reaction [3,4-dihydroxyphenylalanine stains melanoblasts black] are generally negative and do not aid in distinguishing the clear cells and lymphocytes from ordinary epithelial cells. The nuclear pattern of these cells as seen with Feulgen's stain is essentially similar to that with the hematoxylin stain.

HART, J. S. (1951). **Calorimetric determination of average body temperature of small mammals and its variation with environmental conditions.** — *Canad. J. Zool.* **29**, 224-233. 2232

The average body temperature of mice, determined calorimetrically, was 2°C. lower than the colonic temperature. The effects of activity, lethal chilling and environmental temperature on body temperature were discussed. —R. GWATKIN.

MOON, V. H. & TERSHAKOVEC, G. A. (1951). **Dynamics of inflammation and of repair. II. Chemotactic substances in normal tissues.**—*Arch. Path.* **52**, 441-446. 2233

Normal tissue attracts neutrophile leucocytes because of water-soluble substances, varying with the tissues, and inactivated by heat or by refrigeration. Damaged tissues liberate these chemotactic substances which act as a trigger mechanism in the initiation of acute inflammation.—F. R. HARRIS.

SUOMALAINEN, P. & HERLEVI, A-M. (1951). **The alarm reaction and the hibernating gland.** —*Science.* **114**, 300. 2234

The brown fat of hedgehogs stains deeply with Sudan stains in summer, but feebly in the animal when awakened from hibernation. An alarm reaction has taken place; there is a reduction of number and size of the sudanophile particles in the brown fat tissue.—F. R. HARRIS.

HALPERN, B.-N., BIOZZI, G., MENÈ, G. & BENACERRAF, B. (1951). Étude quantitative de l'activité granulopexique du système réticulo-endothélial par l'injection intraveineuse d'encre de Chine chez les diverses espèces animales. I. Méthode d'étude quantitative de l'activité granulopexique du système réticulo-endothélial par l'injection intraveineuse de particules de carbone de dimensions connues. **[A study of the reticulo-endothelial system using the technique of intravenous injection of Indian ink.]**—*Ann. Inst. Pasteur.* **80**, 582-604. 2235

Indian Ink of standardized particle size was injected intravenously into rats and mice. The disappearance from the blood of these particles and their accumulation in the different organs were studied.—L. M. MARKSON.

BALMAIN, J. H., FOLLEY, S. J. & GLASCOCK, R. F. (1951). **Stimulation by insulin of *in vitro* fat synthesis by mammary tissue studied with carbon-14 and tritium.** [Correspondence.]—*Nature, Lond.* **168**, 1083-1084. 2236

Studied with tritium [a hydrogen isotope] and labelled carbon, insulin stimulated rat mammary gland to produce up to four times the usual amount of fatty acid from acetate. —JOHN SEAMER.

BORNSTEIN, J., REID, E. & YOUNG, F. G. (1951). **The hyperglycaemic action of blood from animals treated with growth hormone.** —*Nature, Lond.* **168**, 903-905. 2237

Portal blood from cats given pituitary growth hormone has a hyperglycaemic effect: the suggested liberation of pancreatic hyper-

glycaemic substance to portal blood under the influence of the hormone is supported.

—JOHN SEAMER.

VAN CREVELD, S. & PAULSSEN, M. M. P. (1952). **Isolation and properties of the third clotting factor in blood-platelets.**—*Lancet.* **262,** 23-24. [Authors' summary modified.] 2238

The platelet-factor which neutralizes heparin is a phosphatide, which the authors call factor 3; it has thromboplastic activity—*e.g.*, together with calcium and an accelerator, it converts prothrombin into thrombin. The anti-haemophilic substance present in normal plasma requires for its activity factor 3 as a co-factor. Factors 1 and 2 of the platelets cannot take the place of factor 3 in this respect.

FOULKES, E. C., LEMBERG, R. & PURDOM, P. (1951). **Verdohaem and "verdoglobins".**—*Proc. roy. Soc. Ser. B.* **138,** 386-402. [Authors' summary copied *verbatim.*] 2239

Verdohaem cannot be reconverted into porphyrin derivatives. It is converted into biliverdin by a hydrolytic process without oxidation. Verdohaem contains the 33 carbon atoms of the bile pigments, not the 34 of haem.

In contrast to verdohaem, green haemoglobins (choleglobin, pseudohaemoglobin, cruoralbin) are reconvertible to porphyrin derivatives, though not as readily as sulphhaemoglobin. Heating with alkaline solutions containing dithionite converts them to red haemochromogens, derived from ether-insoluble porphyrins. The myeloperoxidase of leucocytes gives the same reaction. By energetic treatment with mineral acids, the green haemoglobins yield ether-insoluble porphyrin. Their prosthetic group still contains the closed porphyrin ring and 34 carbon atoms. It is thus quite different from verdohaem, and the name "verdoglobins" for the green haemoglobins is misleading.

Protein free pseudohaem compounds can be obtained by treating alkaline solutions of haemins with dithionite and hydrogen peroxide in the presence of cyanide. After removal of cyanide by dialysis, pseudohaematin can be coupled with native globin to a compound with the absorption spectrum of choleglobin, which does not yield biliverdin with acids. It is concluded that the biliverdin which is obtained by the action of acid on choleglobin solutions is not derived from the main components of pseudohaem type, but from an admixture of verdoglobin. Cholehaem (or pseudohaem) compounds are precursors of verdohaem compounds, to which they can be oxidized. Another intermediate, spectroscopically similar to verdahaem, but reconvertible into porphyrin derivatives, like pseudohaem, can be observed, particularly in the meso series.

The formation of choleglobin, of pseudohaemoglobin, and of protein-free pseudohaems from the cyanide compounds of haematins is accompanied by by-reactions, the former two reactions by a condensation with cysteine-sulphur from globin, the latter by the introduction of sulphur-containing groups derived from dithionite. Such by-reactions do not occur in the bile pigment formation *in vivo* and limit the amount of bile pigment obtainable from haemoglobin *in vitro*.

KIRSCHNER, N., PRITHAM, G. H., BRESSLER, G. O. & GORDEUK, S., JR. (1951). **Composition of normal turkey blood.**—*Poult. Sci.* **30,** 875-879. [Authors' summary slightly modified.] 2240

The blood and sera of 28 turkey hens and of 22 turkey toms were analyzed to determine the concentration of amino acid nitrogen, non-protein nitrogen, urea nitrogen, uric acid, creatine, creatinine, glucose, cholesterol, inorganic chlorides, potassium, sodium and calcium. A statistical evaluation of the data showed significant differences between the mean values for hens and toms for the following components: chlorides, cholesterol, creatine, uric acid, glucose, and amino acid nitrogen. The average values for amino acid nitrogen, uric acid, non-protein nitrogen, glucose, sodium, calcium, and inorganic chloride were higher than those reported for human beings and the average values for total creatine and creatinine and for cholesterol were somewhat lower.

O'CONNOR, R. J. (1951). **Respiration and cell division in the red blood cells of the chicken embryo.**—*Brit. J. exp. Path.* **32,** 336-340. 2241

Investigation of mitotic rate, aerobic glycolysis, respiration and respiratory quotient of developing chick embryo erythrocytes indicated a relationship between cell division and carbohydrate metabolism.—JOHN SEAMER.

CASTIGLI, G. (1949). Osservazioni sul sistema di conduzione nel cuore di uccelli domestici. [**Observations on the conductive system of the heart in domestic fowls.**]—*Nuova Vet.* **25,** 160-167. 2242

The conductive system in the avian heart is not so well known as that of mammals. C. studied microscopically the heart of the following species: *Columba domestica, Gallus domesticus, Numida meleagris, Acryllium vulturinum, Meleagris gallopavo, Pavo cristatus, Phasianus colchicus, Anser cinereus* and *Anas boschas.* He claimed to have found in certain species (in

the turkey, for instance) a kind of large myocyte containing numerous myofibrils and a type of muscle fibre in which the sarcoplasm appears to be abundant and rich in glycogen. He stated also that the avian heart possesses three conductive systems: a dorsal (which should not be considered as secondary), a ventral which is but the continuation of the dorsal system in the ventricles and a paravascular; this conclusion seems to be in agreement with the classical observations on this subject.
—J. K. Gan.

Lannek, N. & Rutqvist, L. (1951). **Electrocardiography in horses. A historical review.** —*Nord. Vet.-Med.* **3**, 435-447. [In English.] 2243

In the works of 23 authors, five different systems of leading were described: (1) Extremity leads, one to the right fore leg, one to the left hind. (2) The electrodes were placed at points where the longitudinal axis of the heart meets the skin, *i.e.*, over the left apex and the right shoulder blade. (3) Using three leads, the anus being the third electrode position. Thus: lead 1, left brisket-prescapular region; lead 2, left brisket-rectum; lead 3, prescapular region-rectum. (4) Lead 1, withers-right shoulder; lead 2, right shoulder-anterior part of the sternum; lead 3, right shoulder-left hind leg. (5) Lead 1, the right side of the neck-sacrum; lead 2, the right side of the neck-apex region; lead 3, sacrum-apex region. Various modifications of these systems were also described. Some of the authors used as electrodes zinc plates covered with cotton wool moistened with zinc sulphate solution. A later development was the use of subcutaneous needles. The rectal lead consisted of a brass rod. Methods (1) and (2) gave the largest and most distinct deflections of the various leadings tried by their author. (2) gave a chiefly negative initial complex, while the proper P-wave was always preceded by a small positive deflection, probably originating from the action of the venae cavae. (1) is an example of extremity leading which had been taken over from human electrocardiography. Most of the later authors reviewed, however, rejected this system for anatomical reasons.

The authors, whose work on the subject is here reviewed, examined numerous cardiological cases using one or more of the basic leading systems enumerated, or modifications. These too are described at length.

The reviewers, while not underestimating the difficulties of electrocardiography in the horse, view with scepticism some of the theoretical arguments concerning the choice of leads. Their arguments being closely reasoned are difficult to summarise. Their conclusions are: That despite the arguments for and against extremity leading, the only reason for avoiding it in the horse is if it fails to reveal myocardial lesions. That unipolar leading (of which (2) is an example) is a "rational system of leading which affords a deeper insight into the electrophysiologic phenomena than the use of bipolar leads". That the abandoning of electrodes connected to the body surface is an "unfortunate development".—L. M. Markson.

Hadek, R. (1951). **The lymph nodes of the guinea-pig.**—*Brit. vet. J.* **107**, 487-493. 2244

A description of the normal positions and characteristics of the lymph nodes in the g. pig.
—F. R. Harris.

Code, C. F. (1951). **The inhibition of gastric secretion: a review.**—*Pharmacol. Rev.* **3**, 59-106. 2245

C. discussed the literature concerning the inhibition of gastric secretions with a view to the establishment of a temporary vantage point from which to visualize future profitable studies.
—E.M.J.

Spörri, H. (1951). Physiologie der Wiederkäuer-Vormägen. **[Physiology of the forestomachs of ruminants.]**—*Schweiz. Arch. Tierheilk.* **93**, April (Spec. No.) pp. 1-28. [English, French and Italian summaries.] 2246

A general account is given of the physiology of the ruminant stomach. The oesophageal reflex, innervation of the stomach, rumination and tympany are considered in the first part of the article whilst the chemical action of the microflora on cellulose etc., the synthesis of amino-acids and certain vitamins and the production of gas are considered in the second part. No new facts are brought to light.
—J. A. Nicholson.

Hughes, R. A. & Robinson, F. (1951). **Acetylcholine and the central nervous system. A review of neurochemical mechanisms.**—*Yale J. Biol. Med.* **24**, 35-47. 2247

The action of drugs upon the C.N.S. conforms to the theory of the presence of cholinergic and non-cholinergic neurones. It is probable that chemical rather than electric cerebral mechanisms exist.—F. R. Harris.

I. Peeters, G., Coussens, R. & Sierens, G. (1949). **Physiology of the nerves in the bovine mammary gland.**—*Arch. int. Pharmacodyn.* **79**, 75-82. [Abst. in *Brit. Abstr.* A III. February. p. 261 of absts. (1950), copied *verbatim*. Signed: D. R. Wood.] 2248

II. PEETERS, G., COUSSENS, R. & OYAERT, W. (1949). **Physiology of the cistern of the bovine mammary gland.**—*Ibid.* 113-122. [Abst. in *Brit. Abstr.* A III. February. p. 261 of absts. (1950), copied *verbatim.* Signed: D. R. WOOD.] 2249

I. The pressure changes in the cistern and the teat length were recorded in the isolated perfused udder. The effects of stimulation of the inguinal nerve and the changes produced in these effects by nicotine, tetraethylammonium, and dibenamine confirm the sympathetic innervation of the udder and the probable absence of autonomic ganglia and parasympathetic fibres.

II. In the perfused isolated udder, the response to pressure changes was recorded in one cistern. The cistern shows a slow adaptation, which is more obvious if the pressure increase is gradual, both *in vivo* and *in vitro*. Due to vasoconstriction, the pressure is reduced after adrenaline. Pitocin increases intra-cisternal pressure, due to expulsion of milk into the cistern. This effect was also seen when the udder was perfused with blood from a freshly milked cow.

WOLF, A. V. (1950). **The urinary function of the kidney.** pp. xiii + 363. New York: Grune & Stratton, Inc. $7.50. 2250

This review of up-to-date data on urinary function has the backing of a bibliography containing 1,189 references; nevertheless, the author has succeeded in producing an integrated account of renal physiology which is eminently readable.

The author stresses in his discussion the function of the kidneys in relationship to the physiology of the organism as a whole. Past and current theories of fluid transfer and various aspects of renal function are considered critically from both physical and physiological standpoints. The author has found it necessary to introduce a more precise and exact nomenclature to cover some of the ill-defined terms commonly used previously.

In the monograph an iconoclastic and lucid account is given of water metabolism, the validity of tests designed to assess renal function, urine formation, oedema, diuresis and antidiuresis, and the large part played by the endocrine organs in the physiology of the kidney.

This exhaustive treatment of the many interwoven factors which interplay to control the output of urine by the kidneys in order to subserve the requirements of the animal in relationship to its external and internal environments, will provide a valuable book of reference to clinicians, endocrinologists, physiologists and pharmacologists alike.—F. R. BELL.

BERN, H. A. (1949). **The distribution of alkaline phosphatase in the genital tract of male mammals.** — *Anat. Rec.* **104,** 361-377. [Author's summary copied *verbatim.*] 2251

Alkaline phosphatase has been demonstrated histochemically in the genital tract of 7 species of male mammals. Various genital organs which are anatomically homologous in this series of mammals may show widely different localizations of alkaline phosphatase. Based on the histologic localization of the enzyme, distinction is made between stromal phosphatase and secreted (epithelial) phosphatase, and a possible relation of the former to sugar transport is discussed.

Epithelial and secretory evidences of alkaline phosphatase are especially noticeable in the seminal vesicle of the guinea pig and many rabbits; in the vas deferens of the rabbit (including the ampullae) and hamster; in the ventral prostate, preputial gland and bulbourethral gland of the rat and mouse; and in the prostate complex of the bat.

WIMSATT, W. A. (1951). **Observations on the morphogenesis, cytochemistry and significance of the bi-nucleate giant cells of the placenta of ruminants.**—*Amer. J. Anat.* **89,** 233-281. [Author's summary and conclusions slightly modified.] 2252

W. presented observations on the morphogenesis, cytochemistry, and physiological significance of the binucleate giant cell of the placenta of the sheep and cow. Much new information concerning this unique cell was brought to light, but the precise significance of some of the observations has still to be determined.

The conclusion of most earlier authors that the binucleate cell is of trophoblastic origin was confirmed. The fully-differentiated binuclear cells are "post-mitotics" in that they are incapable of cytokines is, a fact not appreciated by earlier authors. New binucleate cells probably always arise by the direct transformation of the less specialized columnar trophoblastic cells. The characteristic duplication of the nucleus is accomplished by mitosis, rather than by amitosis as postulated by many earlier authors. A multinucleate condition sometimes results from the mitosis of one or both of the nuclei of a binucleate cell.

Inequalities in the distribution of giant cells in different parts of the chorion were noted, especially in the sheep. There is reason to suppose that these inequalities have a physiological basis. Evidence was found that the giant cells in certain parts of the placenta of the sheep are erythrophagocytic and probably assist in making

iron available to the fetus. Observations which suggest that the binucleate cells may have a secretory function were discussed.

The binucleate cell is highly polarized, both morphologically and physiologically. The morphological evidence of polarity consists in constant differences in the texture and staining affinities of the cytoplasmic zones above and below the nuclei, the segregation of mitochondria and Golgi bodies in the supranuclear zone, and differences in the intracytoplasmic localization of such specific chemical constituents as phosphatase, glycoprotein and ribose nucleic acid. A physiological polarization may be inferred from the above, but is also suggested by the constant difference in orientation of the binucleate cells situated at the surface of the chorion in contrast with those attached to the uterus, and the polarized nature of a phenomenon resembling apocrinal secretion which is engaged in by giant cells situated at the surface of the chorion. The binucleate cells are rich in a variety of chemical materials of known or presumed physiological importance, including alkaline, and possibly acid, phosphatase, ribose nucleic acid, a characteristic mucoidal material which reacts positively to a great variety of tests for carbohydrate-protein complexes, and in some parts of the chorion, lipid droplets of variable size and number. Variations in the concentration of certain of these elements in giant cells in different regions of the placenta are described and discussed in terms of their possible physiological import. The morphological, chemical and physiological attributes of the binucleate cells indicate a close affinity between these elements and the specialized syncytial trophoblast of deciduate placentas, and it is suggested that the two are homologous. If this conception is justified the giant cells may constitute an important link in any consideration of the evolution of the placenta.

ZUCKERMAN, S. (1950). **A discussion on the measurement of growth and form.**—*Proc. roy. Soc. Ser. B.* 137, 433-523. 2253

This discussion was under the leadership of S. Zuckerman. The names of other contributors are given against the appropriate sections.

The pattern of change in size and shape. Z. drew attention to the many possible problems that can be considered under the heading of growth. This discussion was to examine the methods by which the changing pattern of an organism can be measured. Work on problems of differential growth was mentioned together with some of the applications of growth equations.

Measuring growth in farm animals, J. HAMMOND. The method to be adopted depends on the use to which the results are to be put. The choice of the basic measurement (head length, shoulder height) is important. As maximum growth rates of different parts occur at different times of the animals' life, alteration of nutritional planes at such times can influence proportions and composition of the body.

Growth and form in plants, F. G. GREGORY. The fundamental differences in the growth processes of higher animals and plants were mentioned and exemplified. The characters determining the external form of the higher plants were briefly discussed. A quantitative study of plant form may be divided into a study of circumscribed problems such as the changing form of a developing leaf, and a study of interrelated growth processes of various organs of the whole plant.

Relative growth and form transformation. J. S. HUXLEY. Allometry is the term used to describe growth of parts growing at a different rate from the body. H. explained his law of simple allometry and some of its applications. The study of growth gradients (the regular graded distribution of the capacity for differential growth) follows from that of allometric growth. These gradients may interfere with each other; the capacity for differential growth of the whole body may be deformable as a whole. Allometric gradients can be genetically controlled as units, alterable by natural selection.

The theory of differential growth analysis, D. A. SHOLL. The establishment of growth formulae was described together with some of the errors possible if inadequate parameters are used for statistical tests of the resultant curve. The allometric formula was briefly discussed and suggestions for alternative methods for studying differential growth were mentioned.

Transformation of shape, P. B. MEDAWAR. An analysis of differential growth will not yield a complete description of change of shape. Shapes are not measurable but are definable in principle by sets of points or variables. Transformation of shape will be defined by a change of such variables.

The place of statistics in the study of of growth and form, F. YATES. The author discussed the subject at some length.

The accuracy of growth curves, J. B. S. HALDANE. A discussion as to which line or curve passing through a scatter diagram represents best the relations between two variates. A method was described of obtaining an average when a number of individual growth curves is available.

Biological foundations of measurements of growth and form, C. H. WADDINGTON. Valid biological conclusions can be drawn from mathematical comparisons of growing forms only in so far as the objects compared are biologically similar. Physiological analysis should therefore be made prior to mathematical treatment.

Genetical aspects of size allometry, E. C. R. REEVE. A discussion of some of the genetical factors which cause variation in body proportions of *Drosophila melanogaster* and methods of influencing them by selection of stock.

The exact description of living organization, J. Z. YOUNG. Y. examined the importance of the study of the relative growth and shape of the body, and suggested a broadening of outlook to include an analysis of biochemical backgounds which influence the difference in shape. A warning was given that a study of differences between shape of one part in related organisms may detract attention from other differences. The central task of general biology is the exact definition of lives of organisms as active self-maintaining systems.—R. N. SMITH.

LATIMER, H. B. (1949). **The prenatal growth of the heart and lungs in the dog.**—*Anat. Rec.* **104,** 287-298. [Author's summary copied *verbatim.*] 2254

Empirical formulae are given so that the weight of the heart or the lungs, including the trachea and bronchi, may be determined from either the body weight or the body length. The heart increases as a linear function of the body weight and as a linear function of the body length in the latter part of the fetal period. In the first part of its growth against body length the curve is concave superiorly. The heart forms its maximum percentage (1·26%) of the body weight at the beginning of the period and this decreases rapidly at first and then more slowly to about 0·68% in the fetuses at term. The lungs and trachea increase as a linear function of the body weight and they form curves concave superiorly when plotted on body length. The lungs increase irregularly or from a percentage of about 1·4% at first to a maximum of 3·18% at 120 gm. of body weight and then decrease and come back to nearly this percentage at term. The heart increases 34 times, the body weight 66 times and the weight of the lungs and trachea 121 times during the fetal period.

SELLERS, A. F. & ROEPKE, M. H. (1951). **Studies of electrolytes in body fluids of dairy cattle. I. Effects of water diuresis on renal excretion of several elements.**—*Amer. J. vet. Res.* **12,** 183-186. [Authors' summary copied *verbatim.*] 2255

Magnesium and potassium would appear to be excreted by the same mechanism, in the bovine kidney. The absolute excretion of each, at least in experiments of short duration, seems independent of the volume of urine. Calcium, sodium, chloride, and total phosphate appear to be excreted in larger amounts with water diuresis than before such diuresis is imposed.

BASSETT, E. G., MCMEEKAN, C. P. & WODZICKI, K. (1951). **Observations on the cattle pituitary.**—*N.Z. J. Sci. Tech.* Sect. A, **32,** 1-13. 2256

The authors examined in detail 1,282 bovine pituitary glands collected in a New Zealand slaughter house; 902 were from dairy cows, mainly Jersey, 6–10 years old, and 380 from Hereford steers 4–5 years old.

Dairy cow glands were heavier and generally rounded in shape as compared with the pear shaped glands of the beef steers. This shape difference appeared to be caused by the larger proportion of anterior lobe in the dairy cattle. Large colloid cysts were present in the clefts of about 30% of the dairy cow glands. Stilboestrol treatment prior to slaughter increased the weight of the gland whereas pregnant mare's serum and thyroprotein had no effect.

—E. J. H. FORD.

LE BARS, H., SIMONNET, H. & STERNBERG, J. (1951). Recherches sur la biochimie des composés phosphorés du lait. III. Les proteines phosphorées de la glande mammaire en lactation. **[Biochemistry of phosphorus compounds in milk. III. Phospho-proteins of the mammary gland during lactation.]**—*C.R. Acad. Sci., Paris.* **232,** 1148-1150. 2257

The P containing protein in the tissue of the lactating mammary gland of a dog was studied P.M. five days after injection of P^{32}. It was found (a) to be richer in P than casein, (b) the ratio of serine N: total N was higher than in casein in the last milk withdrawn and (c) the ratio P: serine N was much higher than in phosphoserine.—E. C. FOULKES.

KOPACZEWSKI, W. (1950). Physico-chimie du lait. **[Physico-chemistry of milk.]** pp. viii + 176. Paris: Dunod. Fr. 1000. 2258

The five chapters of this monograph deal with certain aspects of the colloid chemistry of milk. An introductory chapter on the physico-chemical properties is followed by a consideration of clotting as induced by acid-producing micro-organisms, by rennet and by a range of chemical compounds. A discussion of stabilization and a description of factors effective in this respect follows. The breaking of the colloidal

equilibrium and consequent separation of fat by a range of compounds, is considered in the fourth chapter, while the final chapter compares the properties of milk with other colloidal systems such as blood and latex.

Much of the material included is the result of the author's own investigations: some 500 references are given but recent British and American work receives relatively little attention.—H. PAVER.

See also absts. **2148** (Division of Biochemistry of C.S.I.R.); **2297** (effect of light and temperature on moulting in turkeys); **2325** (book, blood clotting).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

GRAY, R. D., EVANS, J. H. & PEARCE, G. V. (1951). **A double-inoculation screening test for tubercle bacilli in milk**—*Mon. Bull. Minist. Hlth Publ. Hlth Lab. Serv.* **10,** [Dec.] 284-290. [Authors' summary modified.] **2259**

A double-inoculation technique for tubercle bacilli is described whereby two samples of milk can be tested in the same guinea-pig. The method consists in bilateral subcutaneous injections in the inguinal region, and interpretation depends upon which, if either, set of inguinal glands develops tuberculous lesions 6 weeks later. The test-failure rate (through premature death) is about the same as when single animals are used (13 per cent.), but considerably more than when pairs of animals are used (2·5 per cent.).

SEELEMANN, M., PILZ, W. & MEYER, A. (1951). Pro oder contra Kurzzeiterhitzung der Milch. **[For or against pasteurization of milk.]**—*Mh. prakt. Tierheilk.* **3,** 142-151. **2260**

An account of tests which showed that tubercle bacilli in milk, even in cases of massive infection, do not survive a temperature of 75-68°C. for 40 sec.—W. R. BETT.

ANGELUCCI, N. (1950). L'impiego dei raggi ultravioletti nella conservazione delle carni. **[Preservation of meat by ultra-violet irradiation.]**—*Atti Soc. ital. Sci. vet.* **4,** 686-695. [English and French summaries.] **2261**

Samples of fresh meat kept in the same room were (a) submitted to ultra-violet irradiation, (b) kept under normal conditions. After 60 days the latter were covered by a thick layer of moulds, but the former were unaffected and had normal appearances. The author considered that to avoid the growth of small and isolated mould colonies on the portions not directly irradiated, the action of ultra-violet light should be supplemented by moderate but continuous ventilation.—M. BERTANI.

ENGDAHL, B. O. (1950). Färgförändringar i levern hos slaktade djur. **[Colour changes in the liver in slaughtered animals.]**—*Nord. Vet.-Med.* **2,** 42-46. [In Swedish. English and German summaries. Abst. from English summary.] **2262**

Changes in the colour of the liver of slaughtered animals may be due to causes other than infection, fever, parasites, toxic substances, or to P.M. changes. The author assumes that release of glycogen from the liver is the cause of these changes in its colour. Fractures, contusions and rough transport of slaugher animals, *i.e.*, the infliction of considerable physical pain, may cause such changes in colour, nearly always a shade of brown, brownish yellow or yellow.

E. referred to common causes of discoloration of the liver after death.

VAN VEEN, A. G. & LATUASAN, H. E. (1950). **Fish poisoning caused by histamine in Indonesia.**—*Doc. neerl. Ind. Morb. Trop.* **2,** 18-20. [In English.] **2263**

The authors reported cases of fish poisoning in human beings and dogs. The fish was a cheap variety caught near the Indonesian island of Celebes; it is usually salted and dried. Of the salted samples tested, several appeared to be more or less toxic to human beings even in quantities as small as 10 g., the symptoms being similar to those of histamine poisoning. Histamine was found in the toxic, but not in the non-toxic, samples in a concentration of 5–7 mg. per g. of dry substance. It was thought that the histamine originated from histidine of the fish proteins by active bacterial amino-acid decarboxylase. The authors were able to isolate two histamine producing strains, (a) Gram positive cocci and (b) Gram positive rods. The dried and salted fish samples contained about 70% protein. Accepting a histidine content of fish muscle of 2·4% and a conversion of histidine to histamine of 20% the bacteria would produce 35 mg. histamine per 10 g. product, *i.e.*, about the same amount as that in the toxic samples.—G. DAVIES.

See also absts. **2001** (milk sampling scheme); **2002** (milk plate test); **2313** (report, India).

REPRODUCTION AND REPRODUCTIVE DISORDERS

BERTONI, A. (1948). La fecondazione artificiale delle cavalle nella regione friulana ed il controlle de ciclo estruale. **[Artificial insemination of mares in the Friuli Region and the control of the oestrous cycle.]**—*Zootec. Vet., Milan.* **3,** 302-305. 2264

A high percentage of the mares presented at the centres in the Friuli Region were not suitable for artificial insemination. B. discussed the conditions relating to oestrus and fertility.

—L. BADIALI.

HOLT, A. F. (1952). **Analysis of conception rates and other data in artificial insemination.** —*Vet. Rec.* **64,** 31-38. [Parts of author's summary copied *verbatim.*] 2265

Statistical analysis is made of the results obtained in five years' work at a Cattle Breeding Centre. A conception rate calculated at three weeks can be translated into that for six weeks, nine weeks, three months and the true calving conception. The difference between the three months and calving conception has diminished progressively.

There is no seasonal variation in conception rates nor in the relationship between rates taken at the various periods, but an improvement in conception rate has occurred over the five-year period. The fall in the abortion rate is shown and compared with the increase in S. 19 calfhood vaccination. The increase in the number of inseminations per bull is shown over the period 1944-50.

STEWART, D. L., MELROSE, D. R. & WILSON, W. R. (1951). **The effect of streptomycin on the fertility of bull semen.**—*Vet. Rec.* **63,** 609-612. [Authors' summary copied *verbatim.*] 2266

The addition of streptomycin calcium chloride complex in the proportion of 1,000 μg. per ml. to the normal yolk-citrate semen diluent used in two controlled experiments involving 10,888 cows resulted in a highly significant rise in conception rate based on the percentage of non-returns to the first service after a period of 16 weeks. This increase in conception rate was present on the first, second and third day of use of the semen. The increase in conception rate was highly significant in certain individual bulls with a low fertility rate. Possible explanations of the mode of action of streptomycin on the fertility of semen are discussed and a specific infection is suggested.

LORENZ, F. W. & TYLER, A. (1951). **Extension of motile life span of spermatozoa of the domestic fowl by amino acids and proteins.** —*Proc. Soc. exp. Biol., N.Y.* **78,** 57-62. [Authors' summary copied *verbatim.*] 2267

Glycine, when added to saline diluents at concentrations between 0·003 and 0·133 molar, extends the life span of spermatozoa of the domestic fowl as measured by persistence of motility at 22°C. Glycine was relatively more effective on dilute than on concentrated semen suspensions. Certain egg-white proteins had a similar effect on the life span of sperm. Conalbumin and a derived protein, hydroxylamidoovomucoid, were more effective than other proteins from egg white. Purification of the saline diluent alone served to prolong the life span of spermatozoa and correspondingly reduce the effects of glycine and proteins.

ANDERSON, J., PLOWRIGHT, W. & PURCHASE, H. S. (1951). **Pathological and seminal changes in bulls affected with a specific venereal infection.**—*J. comp. Path.* **61,** 219-230. [Authors' summary copied *verbatim.*] 2268

An account is given of the pathological changes in the genital organs of bulls affected with a specific venereal infection [bovine infectious epididymitis and vaginitis], together with observations on the physico-chemical composition of semen from such bulls and the interrelationship between the gland pathology and the seminal composition.

THOMAS, J. W. & MOSS, S. (1951). **The effect of orally administered molybdenum on growth, spermatogenesis and testes histology of young dairy bulls.**—*J. Dairy Sci.* **34,** 929-934. [Authors' summary amended.] 2269

Sodium molybdate was fed to two bull calves. The usual symptoms of molybdenum poisoning consisting of mild diarrhea, decreased body weight gains, anemia and greying of the black hair areas were observed. In addition, lameness and joint involvement were found. The most striking and heretofore unnoted symptom was the lack of sexual libido exhibited. Histological examination of the testes showed marked damage to interstitial cells and germinal epithelium with little or no spermatogenesis present. Further investigations of these effects and the possibility of using molybdenum as a tool in experiments involving the testis and its products are indicated.

ALMQUIST, J. O. (1951). **A comparison of penicillin, streptomycin and sulfanilamide for improving the fertility of semen from bulls of low fertility.**—*J. Dairy Sci.* **34,** 819-822. [Author's summary slightly modified.] 2270

Results obtained from seven bulls of low fertility on a split-sample experiment showed a highly significant average increase in fertility when yolk-citrate diluted semen was treated with either penicillin, streptomycin or penicillin plus streptomycin. Based on 6 months non-returns, the improvement in fertility with penicillin, streptomycin and penicillin plus streptomycin amounted to 19, 26 and 23 more cows settled per 100 cows bred, respectively. However, the differences between the three treatments were not significant statistically. The addition of sulfanilamide to yolk-citrate diluent did not increase breeding efficiency. Two relatively infertile bulls failed to respond sufficiently to any of the treatments to continue in active service throughout the study.

The results of this experiment indicate that penicillin and streptomycin, either singly or together, offer a valuable means for improving the fertility of semen from certain bulls of low fertility in artificial breeding.

KARRAS, W. (1951). Spermastudien. 2. Die biologische Aufgabe der Kopfkappen der Spermien. **[Study of semen. II. Function of the acrosome of spermatozoa.]**—*Mh. prakt. Tierheilk.* **3**, 151-167. 2271

K. observed the close relationship between the stability of the acrosome and the fertilizing power of spermatozoa, those with labile acrosomes having altered chemotactic and rheotactic behaviour as well as poor fertilizing ability. A method to demonstrate the stability or lability of the acrosome by means of a carbol-nigrosine stain is described.—J. A. NICHOLSON.

SAPSFORD, C. S. (1951). **Seasonal changes in spermatogenesis in rams: their relation to plane of nutrition and to vitamin A status.**—*Aust. J. agric. Res.* **2**, 331-341. 2272

Twenty-two Merino rams, about 18 months old, were fed on a carotene-deficient diet, half of them being on a higher, and half on a lower level of intake. At both dietary levels four rams received also a supplement of 7·7 mg. of crystalline carotene daily. The experimental period was about two years. Observations were made on body weight, plasma vitamin A, clinical signs of vitamin A deficiency (the only one observed being hyperkeratosis of the penis), and seminal characters.

It was observed that the summer depression of semen characters can occur independently of carotene intake or plane of nutrition, but is more evident in animals on the lower plane and without carotene supplementation. Animals with low plasma vitamin A values were more adversely affected than those with normal values.

It is suggested that the seasonal changes in ram's semen are caused by environmental factors other than diet; possibly the semen production, like the breeding season of the ewe, is influenced by the length of day.

—C. R. AUSTIN.

MANN, T. (1951). **Inositol, a major constituent of the seminal vesicle secretion of the boar.** [Correspondence.]—*Nature, Lond.* **168**, 1043-1044. 2273

Inositol, in the high concentration of 40% of total dry matter, was isolated and identified.

—P. H. HERBERT.

PARSONS, U. (1950). **Fructose in rabbit semen: a study of normal fluctuations, and changes evoked by testosterone and stilboestrol.**—*J. Endocrinol.* **6**, 412-422. 2274

There were wide variations in the fructose content of the semen of normal rabbits. Stilboestrol inhibited the formation of seminal fructose and when administered with testosterone the stimulating effect of the latter was inhibited.—JAS. G. O'SULLIVAN.

ROY, A., LUKTUKE, S. N. & BHATTACHARYA, P. (1950). **Ascorbic acid content of ovary and corpus luteum during various stages of oestrous cycle and early pregnancy.** [Buffaloes.]—*Indian J. vet. Sci.* **20**, 199-202. [Authors' summary modified.] 2275

The ascorbic acid content of the ovaries obtained from buffalo cows at various stages of the oestrous cycle was estimated. Of the two ovaries from the same animal, one in which ovulation had occurred very recently, was found to contain 19·38 mg. per 100 g. and the other 15·56 mg. The higher concentration in the former was found to be statistically significant. The ascorbic acid contents of the ovaries in various other conditions studied were found to be of the same order. Persistent corpus luteum, compared to normal corpus luteum, is characterized by a very low concentration of ascorbic acid.

LAPOLLA, L. (1950). Genocutireazione e funzioni sessuali nei bovini. **[Skin reaction and sexual functions in cows as described by Ceni.]**—*Zootec. Vet., Milan.* **5**, 474-481. [English summary.] 2276

Ceni's test was applied to 31 cattle of different ages and sex. The test consists in the application, after scarification, to the skin of the scrotum or udder of an alcoholic extract obtained from the sex glands of fishes and birds. It is claimed that the intensity of the reaction

indicates the state of activity of the reproductive organs and that the test may have some value in veterinary work.—J. A. NICHOLSON.

MILLER, J. G. (1951). **A technique of endometrial biopsy in the bovine animal.**—*J. Amer. vet. med. Ass.* **119**, 368-370. 2277

A biopsy instrument for the removal of endometrial tissue is described. It consists of specially designed metal tubing attached to a hypodermic syringe. No ill effects were observed in 40 operations. Only biopsies of superficial endometrium were obtained.—R. A. HUCK.

ROWSON, L. E. (1951). **Methods of inducing multiple ovulation in cattle.**—*J. Endocrinol.* **7**, 260-270. [Author's summary copied *verbatim.*] 2278

Follicles in relatively large numbers (average 26) have been consistently produced by the injection of 3600 and 4500 i.u. of whole pregnant mares' serum, and to a slightly lesser degree (average 14), by the injection of similar amounts of commercial processed pregnant mares' serum.

Ovulation after this treatment has been spontaneous, but to a lesser degree when using the processed material (5·4% ovulations) than when using the whole plasma (24% ovulations).

The percentage of ovulations after this treatment has been increased by the intravenous injection of chorionic gonadotrophin at a dosage of 2000 i.u. (22% for processed material and 42% for whole serum). Where a large corpus luteum was present in the ovary during the time of treatment, the percentage ovulations was 52 as compared with only 14 in those cases in which no corpus luteum was present.

Injections of 20 mg. progesterone daily for 4 days after removal of the corpus luteum, and after the P.M.S. injections, had the same effect on the ovulation rate (55% ovulations) as the presence of a large corpus luteum.

Ova produced by either processed or whole serum can be fertilized fairly readily in the absence of a corpus luteum, but in its presence or after daily injections of progesterone, no fertilization takes place.

In the presence of a corpus luteum or after injections of progesterone, the ova travel down the Fallopian tube at a greatly increased rate, but were in some cases slowed up by the injection of oestrogens.

AJELLO, P. & LOMBARDO, N. (1950). L'interruzione della gravidanza nella capra con gli estrogeni sintetici. **[Abortion in goats produced by synthetic oestrogen.]**—*Nuova Vet.* **26**, 49-52. 2279

Seventeen goats were injected subcutaneously with a synthetic oestrogen, diluted with oil, in doses of 10–15 mg.; 15 of them aborted.

—M. BERTANI.

PERRY, T. W., ANDREWS, F. N. & BEESON, W. M. (1951). **The effects of stilbestrol on suckling lambs.**—*J. Anim. Sci.* **10**, 602-606. [Authors' summary slightly modified.] 2280

The subcutaneous implantation of either 12 or 24 mg. of stilboestrol significantly increased the gains in weight of unweaned ewe and wether lambs which were running with their dams on pasture. There was no significant difference in response between the two levels of stilboestrol. Treated lambs of both sexes exhibited marked mammary development during the first 28 days of the 112-day trial.

HOLLSTEIN, K. & RINSCHE, K. (1951). **Oestrogenic substances in Driberg peat.**—*Med. Klin.* **46**, 82-83. [Abst. in *Brit. Abstr.* A.III, p. 896 of absts (1951), copied *verbatim.* Signed: P. F. MEYER.] 2281

Peat obtained at Driberg was dried at 100°; after benzene extraction, the non-saponifiable residue was taken up in ether and then in olive oil. Biological assay showed an oestrogen content of 15–400 mouse units per kg. of dried peat.

BECK, A. B. & BRADEN, A. W. (1951). **Studies on the oestrogenic substance in subterranean clover**: (*Trifolium subterraneum* L. var. Dwalganup). — *Aust. J. exp. Biol. med. Sci.* **29**, 273-279. [Authors' summary amended.] 2282

Details are given for the large scale preparation of oestrogenic extracts from subterranean clover. Phase distribution studies, methylation and acetylation tests on the purified extract have indicated that the oestrogen probably contains two phenolic groups. Tests have failed to show the presence of ketone, lactone, carboxylic, or alcoholic groupings. Some details of the assay method are given.

I. SELLERS, A. F. & ROEPKE, M. H. (1951). **Studies of electrolytes in body fluids of dairy cattle. II. Effects of estrogen on electrolyte levels in body fluids in late pregnancy.**—*Amer. J. vet. Res.* **12**, 292-295. 2283

II. SELLERS, A. F., GITIS, T. L. & ROEPKE, M. H. (1951). **Studies of electrolytes in body fluids of dairy cattle. III. Effects of potassium on electrolyte levels in body fluids in midlactation.**—*Ibid.* 296-301. 2284

I. Large doses of diethylstilboestrol given to cows in late pregnancy cause decreased blood serum calcium and serum inorganic phosphate

at parturition, but sodium, potassium, magnesium and chloride content of blood is unaffected.

II. Doses of potassium chloride increased plasma sodium in lactating cattle, and as with sodium chloride, serum inorganic phosphate increased. Biotin pretreatment had little effect. Magnesium in urine was inversely proportional to volume after doses of potassium or sodium salts, or potassium–biotin.—F. R. HARRIS.

HANSEL, W. & TRIMBERGER, G. W. (1951). **Atropine blockage of ovulation in the cow and its possible significance.**—*J. Anim. Sci.* **10,** 719-725. [Authors' summary copied *verbatim.*] **2285**

The time of ovulation was determined for 5 heifers in a control estrous period and in a subsequent estrous period in which atropine was administered at the beginning of heat. Ovulation was delayed from 24–66 hrs. in 4 of the 5 heifers by the atropine treatment.

The time of ovulation was also determined for 5 heifers in a control estrous period and a subsequent estrous period in which both atropine and chorionic gonadotropin, as a source of L.H. [luteinizing hormone], were administered at the beginning of heat. Ovulation occurred slightly earlier than the expected time in 4 of the 5 heifers treated with both atropine and chorionic gonadotropin.

These results indicate that a neural factor is involved in the release of L.H. and ovulation in dairy cattle.

BASSETT, E. G. (1951). **The anterior lobe of the cattle pituitary. I. Quantitative cell type variations in various normal and abnormal sexual conditions. II. Distribution of colloid.** —*J. Endocrinol.* **7,** 203-214 & 215-220. [Author's summaries modified.] **2286**

I. A histological examination was made of the anterior lobe of the pituitaries from 45 female and 15 male cattle and differential counts for the two main secretory cell types were made on sections at three levels.

Statistical treatment of results showed that the method in which cell counts are made on one, or at the most two representative sections only from each of a number of glands is sufficiently accurate for comparative investigations, covering groups of cattle.

Only one type of acidophile cell was observed, but both 'strong' and 'weak' basophiles were found. 'Strong' basophiles appeared to be more frequent in glands from pregnant and stilboestrol-treated cows but were virtually absent in those from steers.

A significant difference has been found in the numbers of acidophile cells, in pituitaries from cows with normal ovaries and those with ovarian follicular cysts.

In the first trimester of pregnancy the number of basophiles was significantly higher than in normal non-pregnant cows. The relative numbers of these two cell types in pituitaries from cows treated with large doses of stilboestrol were comparable with those in pregnant cows.

There was a significantly greater acidophile number for both bulls and steers than for cows. The basophile number for steers was significantly less than that for bulls or cows.

II. Some anatomical and histological features of the pituitary glands of 30 mature cattle in various sexual conditions were described. The glands from five female calves and five foetuses were also examined.

A cone of Wulzen was macroscopically observed in 22 of the 30 mature glands and in two calf glands.

Colloid was found to be a common constituent in the mature cattle pituitary and was seen in the cleft of 13 glands, in blood vessels of 14 and as anterior lobe cysts in 24. Drops of intercellular colloid were present in all glands.

There was some evidence that the colloid drops and the formation of anterior lobe cysts might be associated.

As no colloid was seen in the calf or the foetal material, it seems likely that the various types of this substance are formed during the post-embryonic life of the animal.

KROHN, P. L. (1951). **The effect of thyroidectomy on reproduction in the female rabbit.**—*J. Endocrinol.* **7,** 307-309. [Author's summary copied *verbatim.*] **2287**

Surgical thyroidectomy during pregnancy in rabbits does not affect the outcome of pregnancy. Ovulation, implantation and pregnancy take place normally in thyroidectomized rabbits.

RUBIO PAREDES, J. (1951). Accion del tiroides sobre la actividad sexual y gonádica en las aves. **[Action of the thyroid on sexual activity in the fowl.]**—*An. Soc. vet. Zootec. Madrid.* **5,** No. 3. pp. 33-36. [English and French summaries.] **2288**

Thyroidectomy diminishes the size and activity of the sex organs in fowls to a degree dependent on the extent of thyroid removal and the age at which it is done. In experiments reported, egg laying was delayed by about 35 days in hens totally deprived of thyroid at the age of three months and by 140 days when the operation was done at three weeks. In males, copulation was delayed and was less frequent.

—K. J. SINCLAIR.

RICHARDS, M. B. (1951). **Reproduction in the mouse as affected by additions of calcium carbonate to the diet.**—*Brit. J. Nutrit.* **5**, No. 2. p. iii of Absts. [Only abst. given. Abst. copied *verbatim*.] **2289**

In a breeding test on mice, using the method of continous monogamous mating, three levels of calcium carbonate—0·5, 1·0 and 2·0%—were added to the B diet of Sherman and to three modifications of it. The Ca content of the basal diets was 0·34% and the Ca : P ratio approximately 0·7. On all the diets the highest addition of calcium carbonate, which gave a Ca intake of 1·1% and a Ca : P ratio of approximately 2·3, siginficantly lowered the number and total weight of young weaned, and increased the number and proportion of deaths. Post-mortem examination of the weanlings showed the presence of pale speckled livers, enlarged hearts and small thymus glands in the groups receiving the higher amounts of calcium carbonate.

When supplements of iron citrate, sodium acid phosphate or calcium dihydrogen phosphate were added to the diet, a number of failures to rear litters occurred in the high-Ca groups, but in the litters which were reared the weaning weight seemed to be favourably affected by addition of iron or by reduction of the Ca : P ratio. The heart weights of the weanlings were significantly increased by Ca and decreased by iron, while thymus weights were diminished by Ca and increased by iron.

GOETHALS, P. (1951). Studie van het geslachtsapparaat van zeugen met betrekking tot onvruchtbaarheid en verminderde vruchtbaarheid. **[Study of the genital system in sows in relation to sterility.]**—*Vlaam. Diergeneesk. Tijdschr.* **20**, 155-165. [English, French and German summaries.] **2290**

In eight of 578 uteruses of slaughtered pigs, causes of sterility found included ovarian cysts, tubal abnormalities, pyometra and absence of the uterine body.—C. A. VAN DORSSEN.

CHRISTIAN, R. E., ULBERG, L. C., PHILLIPS, P. H. & CASIDA, L. E. (1951). **The response of low-fertility cows to chlorobutanol and ascorbic acid administration.**—*J. Dairy Sci.* **34**, 978-987. [Abst. from authors' summary.] **2291**

This study covers 116 cows, each of which had been bred four or more times previously without apparent conception. Five g. of chlorobutanol fed daily increased the ascorbic acid concentration of the blood plasma on the day of and two days after heat and also increased the ascorbic acid concentration of the anterior pituitary, 3-day corpus luteum and endometrium as determined at the time of slaughter. The feed containing chlorobutanol was unpalatable to many of the cows and induced an emphysema of the omasal wall. Three g. of ascorbic acid injected subcutaneously every other day from the day of heat until slaughter failed to maintain an increased ascorbic acid content of the blood plasma, 3-day corpus luteum, 34-day corpus luteum, endometrium or embryo. When the results of the studies with chlorobutanol and ascorbic acid were combined, the percentage of cows with normal embryos at 34 days after breeding was 26 in 43 control cows and 30 in 45 treated cows. There is no evidence from these studies that ascorbic acid stimulation is significantly beneficial in increasing conception rate in repeat-breeder cows.

CASIDA, L. E. & CHAPMAN, A. B. (1951). **Factors affecting the incidence of cystic ovaries in a herd of Holstein cows.**—*J. Dairy Sci.* **34**, 1200-1205. [Authors' summary modified.] **2292**

Factors affecting the incidence of cystic ovaries have been examined in a herd of Holstein cattle. The records covered 341 cows and 1,280 cow-service periods over a 10-year period. Cystic ovaries occurred in 18·8% of the cows and 7% of the service periods. The proportion of the cows becoming cystic for the first time averaged 0·058 per service period and no evidence was obtained for significant variation in this rate between service periods. Heritability of the occurrence of cystic ovaries some time during life was estimated for this herd as 0·43. No evidence was obtained for an association between inherent level of butterfat production or test and the occurrence of cystic ovaries. In cows when not milked (mainly in the heifer service period) there was an incidence of cystic ovaries of 3·4%; in those in the milking herd, 6·8%; those started on test and then removed to the milking herd, 8·5%; and those on official test, 10·6%.

KOCH, P. & FISCHER, H. (1950). Die Oldenburger Fohlenataxie als Erbkrankheit. **[Hereditary ataxia in foals of the Oldenburg breed.]**—*Tierärztl. Umsch.* **5**, 317-320. **2293**

Hippen (1949) gave an account of a specific and invariably fatal disease of foals of the Oldenburg breed, which first appeared in Oldenburg in 1938. All the foals affected in the first year were sired by the stallion "Grundus", and later cases were in foals from its offspring. The symptoms first appeared as an intermittent dancing movement of the forelimbs. If the

animal was driven forwards and then suddenly alarmed, it would stop and fall over backwards; it would then get up and run around normally. The symptoms grew worse, and later if the foal was urged to rise, it might raise itself a little on its fore legs, and then fall over backwards. After two or three days, it could no longer get up, but it might still move its legs vigorously, and thus for example push itself along a wall. The head was drawn back. The foal could suck normally if put to the udder, the temperature was normal, and the animal appeared normally sensible and aware of its surroundings. In some cases there was hyperaesthesia of the hind quarters. The course was 8–14 days. The condition could not be transmitted to small experimental animals, and the mare's milk was not under suspicion.

The authors now describe, with photographs, two of seven further cases occurring in Oldenburg foals of the "G" line, but this time in another district. No macroscopic lesions were found.—E. Cotchin.

Regan, W. M., Gregory, P. W. & Mead, S. W. (1944). **Hereditary strabismus** [and exophthalmos] **in Jersey cattle.**—*J. Hered.* **35,** 233-234. [Authors' summary slightly modified.] **2294**

Several animals manifesting convergent strabismus and exophthalmos were found in the California Experiment Station herd. All individuals that became affected had normal eyes at birth, the eyes becoming crossed in varying degrees at 6–12 months of age. The eyes of some of the mature animals became severely crossed. Strabismus is inherited and is conditioned by a single recessive autosomal gene. Two relatively unrelated bulls introduced the gene into the herd. The use of homozygous normal bulls promptly stopped the occurrence of strabismus.

Kosin, I. L., St. Pierre, E. & McLaughlin, R. (1951). **The prevalence of early embryonic mortality in the Broad Breasted Bronze turkeys.**—*Poult. Sci.* **30,** 805-814. [Authors' summary modified.] **2295**

In hatching eggs, classified by candling as "infertile" following 7–10 days of incubation, about 18 percent of the germ discs were found to show unmistakable signs of development. Moreover, when 43 germ discs adjudged to be infertile by gross and by superficial microscopic examinations were studied histo-cytologically, evidence of early development was found in 39 discs. It is suggested that these blastoderms were cases of pre-oviposital mortality and it would appear that the question of low fertility largely resolves itself into that of high incidence of early embryonic mortality.

See also absts. **2173** (nutrition and fertility); **2254** (prenatal growth of organs in the dog foetus); **2321** (book, foetal and neonatal pathology).

ZOOTECHNY

Curasson, G. (1948). Le climat tropical et la production animale. **[Tropical climate and animal production.]**—*Acta trop.* **5,** 97-134. [In French. English and German summaries. Abst. from English summary.] **2296**

A study of the various influences of climate on animals. The circulation, respiration rhythm, and heat regulation are influenced in different ways. Certain breeds are more resistant to heat than others.

Climate may have an influence on the number of red blood corpuscles; in this respect imported breeds are more sensitive to heat than indigenous ones. The endocrine glands are also influenced. The action on the digestive system is only slight. The influence of climate on the skin is discussed.

Sexual activity is influenced. The direct action of heat on the testes can lead to temporary sterility of males; this action too manifests itself indirectly on sexual activity by influencing the thyroid gland. The fertility of females is also affected.

Milk production in hot climates differs greatly from that in temperate ones. The climate itself is of less importance than food. The observed variations concern both the quantity and the chemical constitution of milk. Heat reduces the size of eggs.

A study of the various factors of acclimatization leads to the conclusion that hygiene and nutrition can control the most noxious effects. It may therefore be expected that in future indigenous breeds will be improved with less hesitation by crossing with imported breeds.

Mueller, C. D., Moultrie, F., Payne, L. F., Smith, H. D. & Clegg, R. E. (1951). **The effect of light and temperature on molting in turkeys.**—*Poult. Sci.* **30,** 829-838. [Abst. from authors' summary.] **2297**

Restriction of light to 12 hours daily from 4 to 16 weeks of age and to 10 hours daily from 17 to 28 weeks of age resulted in reduced moulting of the first post-juvenile plumage in turkeys. Temperature variations within the range from

44° to 70°F. had no apparent influence on moulting. Turkeys reared under the restricted light conditions were relatively free from pinfeathers at 24 weeks of age.

BRAUDE, R. & MITCHELL, K. G. (1951). **Antibiotics and liver extract for suckling pigs.**—*Brit. J. Nutrit.* **5,** pp. viii of absts. [Only abst. given. Abst. copied *verbatim.*] 2298

Twenty-four blocks of six litter-mate pigs were dosed daily for 3 weeks during the 2nd to 5th week of life, with 10 mg. of either penicillin or streptomycin, with and without a liver extract. Control animals received liver extract only or no supplement. Twelve blocks were reared indoors and twelve on pasture. Both the meal mixture fed to the sows and the suckling-pig meal mixture fed in creeps contained fish meal. At weaning, when 8 weeks old, the weights of the pigs indicated that there was no growth-promoting effect due to supplementations with penicillin or streptomycin. Previous findings (Braude, 1949) that pigs reared indoors benefit from an addition to their diet of a small quantity of liver extract, and that, irrespective of treatment, pigs reared out of doors grew better than those reared indoor have been confirmed.

BRAUDE, R., KON, S. K. & MITCHELL, K. G. (1951). **The value of antibiotics for fattening pigs. I. As supplements to normal fattening rations.**—*Brit. J. Nutrit.* **5,** pp. viii-ix of absts. [Only abst. given. Abst. copied *verbatim.*] 2299

The value of antibiotics and antibiotic residues as supplements to a basal fattening ration containing fish meal was tested in an individual feeding experiment involving nine replicates of five treatments, and five replicates of the sixth treatment. The experimental unit consisted of six litter-mates of similar initial weight. The experiment lasted 18 weeks starting when the pigs were 13–14 weeks old. The following six treatments were used: (1) control—basal meal only; (2) basal meal with 2 mg. aureomycin; (3) basal meal with 12 mg. penicillin; (4) basal meal with 62·5 mg. penicillin; (5) basal meal with 1814 mg. aureomycin mash (0·4%); (6) basal meal with 1814 mg. streptomycin residue plus 12 mg. penicillin. All supplements are expressed per lb. of meal.

There were no significant differences between the treatments as far as rate of growth and efficiency of food utilization were concerned. There was, however, an indication that the pigs receiving aureomycin mash (treatment 5), aureomycin itself (treatment 2) and those on the higher level of penicillin (treatment 4) grew at a slightly greater rate than control pigs.

See also absts. 2308-2313 (reports, India).

TECHNIQUE AND APPARATUS

FENNER, F. (1951). **The enumeration of viable tubercle bacilli by surface plate counts.**—*Amer. Rev. Tuberc.* **64,** 353-380. [French and Spanish summaries.] 2300

The oleic acid-albumin-agar medium of Dubos, using the surface drop method, is more satisfactory for viable counts than is Lurie's modification of Löwenstein's medium.

—W. R. BETT.

BONNEL, P. H. (1950). Le contrôle bactériologique des produits biologiques au moyen d'un milieu permettant la culture à l'air libre des germes aérobies et anaérobies. **[Testing the sterility of biological products by means of a medium which permits the growth of both aerobic and anaerobic contaminants.]**—*Ann. Inst. Pasteur.* **79,** 422-428. 2301

A semi-liquid medium which is described is recommended for routine tests of sterility of biological fluids such as blood and plasma. The pH is 7·1, and the oxidation-reduction potential 7·5, permitting growth of both aerobic and anaerobic contaminants.—N. DEAN.

NEWSOME, J. (1949). **Cinemicrophotography of helminths and other semi-opaque subjects, using dark ground illumination.**—*J. R. Egypt. med. Ass.* **32,** 935-939. [Abst. from abst. in *Excerpta med.* Sect. 1. **4,** 411. (1950).] 2302

Using a Leitz microscope and two 6 v. 5 amp. Zeiss microscope lamps, N. photographed living schistosomes by dark ground illumination.—JAS. G. O'SULLIVAN.

STOWELL, R. E. (1951). **A modified freeze-drying apparatus for tissues.**—*Stain Tech.* **26,** 105-108. 2303

Liquid nitrogen was employed as both freezing agent and moisture trap during vacuum drying. Paraffin infiltration could be carried out in a few minutes without dismantling the apparatus. The time taken for total treatment was five hours. The apparatus is illustrated and the procedure described in detail.

—L. M. MARKSON.

HAUSCHKA, T. S. & POPPE, E. (1951). **A centrifugal device for the preparation of embryo**

extract and tissue minces.—*Science.* **114,** 664-665. 2304

A piston, driven by centrifugal force, presses the embryos through a fine screen into a collecting chamber. A centrifuge speed of 13,000 r.p.m. is required for 3–4 min. giving, with the equipment used, a R.C.F. of about 20,000 × G. The instrument is depicted, and described in detail.—L. M. MARKSON.

EGGLETON, M. G. (1951). **Extraction of chloride from mammalian skin.** [Correspondence.]—*Nature, Lond.* **168,** 660. 2305

Chloride and thiocyanate were readily extracted by drying the skin at 105–110°C., treating with 10% trichloracetic acid and macerating. —G. DAVIES.

KING, E. J., GILCHRIST, M., WOOTTON, I. D. P., DONALDSON, R., SISSON, R. B., MACFARLANE, R. G., JOPE, H. M., O'BRIEN, J. R. P. PETERSON, J. M. & STRANGEWAYS, D. H. (1948). **Determination of haemoglobin. V. Precision of colorimetric methods.**—*Lancet.* **255,** 563-566. 2306

This is a continuation of the authors' study [see *V.B.* **19,** 1064-1605]. Observations are recorded on a comparison of the reliability of various instruments, including the "grey wedge photometer", used for measuring light absorption. Normal blood from 11 males and ten females was used for the tests and also various derivatives of haemoglobin. Of the haemoglobin derivatives listed, oxyhaemoglobin and cyanhaematin gave the most satisfactory results. In comparison with various standard photoelectric and visual instruments, the results obtained by the neutral grey-wedge photometer were favourable.—J. A. J. VENN.

See also absts. **1943** (diagnosis of bovine mastitis); **1944** (machine milking and mastitis); **1973** (preparation of johnin); **1974** (phase-contrast microscopy of corynebacteria); **2002** (milk plate test for brucellosis); **2243** (electrocardiography in horses); **2277** (endometrial biopsy); **2278** (induction of ovulation); **2320** (book, clinical diagnosis).

MISCELLANEOUS

LANGHAM, W. H. (1950). **Problems of the livestock industry created by atomic explosions.**—*Proc. U.S. Livestock sanit. Ass.* 54*th Ann. Meeting.* pp. 48-58. Discussion pp. 59-61. 2307

The destructive power of a nominal 20 kiloton atomic bomb was discussed. Blast and incineration effects differ only quantitatively from those of a high explosive bomb. Nuclear radiations causing "radiation sickness" may be prompt or delayed. Neutrons and gamma rays may be lethal within a mile of the explosion. —C. C. BANNATYNE.

REPORTS

INDIA. (1949). **Annual Report of the Imperial Veterinary Research Institute, Mukteswar and Izatnagar, for the year 1941-42.** [MINETT, F. C.] pp. 63. Delhi: Manager of Publications. [8vo.] [Rs. 2-6-0 or 4s.] 2308

Post-graduate training worked smoothly. The demand for admission to the Advanced Course in Animal Husbandry and the Special Poultry Course was considerable.

Two strains of BOVINE CONTAGIOUS PLEURO-PNEUMONIA from Assam were found to be immunologically identical and to have affinities with strains received from Australia, but were less closely related to African strains. The tail-tip method of vaccination gave good results in highly susceptible hill bulls.

A few experiments on transmission of RINDERPEST by *Musca* and *Stomoxys* failed to suggest that these flies were of any importance. In one instance the virus was, however, present in *Musca*.

BRUCELLOSIS due to *Br. abortus* was frequently present on organized farms and fairly frequently in certain villages.

Studies on the incidence of TB. showed that in Madras and Mysore it was apparently low. In the Punjab it was probably higher and at one Government Farm in the Province the disease had got a firm foothold in cattle and some goats. JOHNE'S DISEASE seemed to be fairly widespread in India.

Repellents against lice, ticks and warble-flies were tried.

It was found that young plants of barley, wheat and oats, particularly the first-named, could provide plentiful amounts of highly potent vitamin A. Some fundamental research on protein metabolism was also carried out.

The presence of FOWL PARALYSIS among poultry in Bombay and Punjab was confirmed. Work on protein supplements for poultry was continued. For growing chicks, soya bean meal was shown to be less valuable than separated milk, while meat offals gave better results at lower cost than separated milk or soya bean meal.

Egg production of the indigenous fowls at the Institute was higher than so far recorded

in India. The White Leghorn-indigenous cross proved superior to the Rhode Island Red-indigenous cross in egg production.

Studies were initiated upon the influence of climate on animals in health and disease.

—J. M. LAL.

INDIA. (1949). **Annual Report of the Indian Council of Agricultural Research for 1947-48.** pp. 66. Delhi: Govt. of India Press, As.-/12/- or 1 sh. [Items of veterinary interest pp. 16-24.] 2309

TB. disclosed by the tuberculin reaction was fairly widespread, especially among stall-fed cattle and pedigree stock. Samples of milk examined in Calcutta were, however, free from tubercle bacilli. Ducks did not react against tuberculin prepared from tubercle bacilli of other species. The incidence of JOHNE'S DISEASE in Assam was high. The incidence of BRUCELLOSIS was found to be between 17–54% in different provinces; the disease has also been recorded in buffaloes.

Successful inoculation of cattle against RINDERPEST with desiccated goat tissue powder vaccine was reported from the United Provinces. The Vallee "O" strain and its variants were predominant amongst the Indian strains of F. & M. DISEASE. A crystal violet trivalent vaccine prepared at the Indian Veterinary Research Institute conferred satisfactory immunity on cattle, sheep, goats and g. pigs.

ANTHRAX spore vaccine prepared at the Indian Veterinary Research Institute rendered sheep and goats immune for 6–8 months. Treatment with novarsenobillon also gave good results.

A vaccine consisting of a suspension of the pneumonic portion of the lung in saline, gave satisfactory protection against CAPRINE CONTAGIOUS PLEURO-PNEUMONIA in a natural outbreak in Mysore.

Studies on the life history of *Moniezia* have been carried out. At Izatnagar, a number of new larval forms were recovered from infected mites.

Blindness in calves due to VITAMIN A DEFICIENCY has been observed in Orissa. GOITRE among cattle in Assam and in goats in East Punjab has been traced to IODINE DEFICIENCY in the ration and drinking water. Over a quarter of a million fowls were vaccinated against NEWCASTLE DISEASE and the majority developed satisfactory immunity.

PIGEON-POX vaccine was successfully used to immunize fowls against FOWL POX; while sulphaguanidine was used for the treatment of COCCIDIOSIS. Sulfarsenol was found satisfactory against SPIROCHAETOSIS.

Rats fed diets containing hydrogenated vegetable oils absorbed less carotene, calcium and phosphorus than their litter mates fed the same diet but containing ghee (clarified butter fat) in place of hydrogenated oil. Rats fed a deficient Indian diet plus 5% hydrogenated oils developed various deficiency symptoms in two months, whereas their litter mates fed the same diet plus ghee devloped no such symptoms. In testing the comparative feeding values of the straw of wheat, barley, "jowar" (Indian millet), bajra (pearl millet), and rice for milk production, rice straw was found to be the best. Feeding alkali-treated rice straw increased the milk yield of cows whereas simple water-washing had no such effect; in buffaloes, however, both the alkali and water treated rice straw increased milk yield.

An indigenous improved strain of poultry has been evolved, with capacity for producing yearly an average of 156 eggs, weighing 1·6 oz. each. Light Sussex has proved to be the best imported breed in Bombay.

In connexion with the freezing point determination of Indian samples of milk, it has been found that (a) there is no difference in the freezing point of milk from different breeds or between that of whole and separated milk, (b) the boiling of milk lowers its freezing point, (c) it is possible to detect the addition of 3% water provided no sugar has been added to the milk, (d) goats' and ewes' milk have lower freezing points.

In controlling WARBLE-FLY INFESTATION, derris solution had better larvicidal action than singeing or a mixture of tobacco and lime.

The effect of sunlight and variations in temperature and humidity on the bionomics of *Hyalomma aegyptium* and *Boophilus australis* was studied. On protracted exposure to sunlight, the eggs of these ticks lose their fertility. D.D.T. has been found to be more effective than gammexane in control of ticks. *Rhipicephalus haemaphysaloides* is of common occurrence among cattle of South India. Bionomics of *Hunterellus hookeri* has been studied and a method of differentiating parasitized ticks has been established.—S. N. RAY.

INDIA. (1951). **Annual report of the Indian Council of Agricultural Research for 1949-50.** pp. 81. New Delhi: Govt. of India Press. Re. 1 annas 6 or 2s. [Animal husbandry and disease items pp. 32-53.] 2310

Attempts are being made at Hissar to evolve through selective breeding from the local

Hariana breed a dual purpose animal for better milk production and draught capacity. Similar work on the Kangayam breed is being carried out at Madras. Sindhi cows were found to withstand light farm work without any deleterious effect on milk yield. Introduction of superior rams has improved the wool quality of the progeny of inferior ewes. Farm bred sheep were, however, more susceptible to diseases than the village ones. Introduction of Merino blood into Kashmir and Deccan sheep produced an improvement in the quality of indigenous wool. Bikaneri rams have been successfully used in Madras and Orissa to upgrade the local stock. Given proper feeding and housing, the high rate of egg production of improved breeds of poultry can be maintained in Indian villages. In Madhya Pradesh Rhode Island Red crosses with the indigenous stock have been found to be good egg producers.

A double heat treatment method has now been found to preserve milk quality for over 24 hours even under field conditions. Ghee (clarified butter fat) samples prepared by the decantation method from butter obtained from processed milk proved better than those made by direct heat treatment from butter from unprocessed milk. A concentrated preparation of the vegetable rennet from the plant *Withania coagulans* has been produced.

The nutritive values of various grasses and tree leaves have been determined at Izatnagar and at Gauhati (Assam). In Orissa feeding of balanced rations to village cattle has been found to improve their productive capacity.

The efficacy of different vaccine preparations in the control of RINDERPEST, F. & M. DISEASE, HAEMORRHAGIC SEPTICAEMIA, SHEEP POX and GOAT POX was tested in various provinces. BRUCELLOSIS and TB. IN CATTLE are fairly widespread throughout India. SURRA was encountered in Orissa, Bombay, Assam and Uttar Pradesh, and treatment with antrypol gave good results. D.D.T. spraying causes a decline in the incidence of this disease. Nasal SCHISTOSOMIASIS is widespread in parts of Bombay and West Bengal. In cattle, FLUOROSIS from Madhya Pradesh and GOITRE from Assam have been reported. Incidence of HUMP SORE was very high in Orissa. Severe outbreaks of ENCEPHALOMYELITIS among sheep and goats have been reported from Hissar and Orissa. NEWCASTLE DISEASE continues to be the commonest fatal disease of poultry, though vaccination of clean birds wherever practised has given good results. The new vaccine against FOWL POX evolved at the Indian Veterinary Research Institute has been found very effective in most States. SPIROCHAETOSIS and COCCIDIOSIS are fairly common diseases of poultry in India. In the former, injection of sulfarsenol and in the latter administration of sulphamethazine or soluthiazole were found effective. The AVIAN LEUCOSIS COMPLEX and contagious CORYZA in fowls were reported from Madras and Mysore. HELMINTH INFESTATION of poultry was encountered in most States. Other work on helminthiasis include the recovery of all the stages in the life-history of *Moniezia expansa*; successful treatment with copper sulphate or carbon tetrachloride of cattle infected with paramphistomes, and the use of tetrachlorethylene and mepacrine for the treatment of ASCARIASIS. Derris root powder proved the best insecticide against WARBLE FLY INFESTATION, D.D.T. or gammexane against ticks, mites or lice.

—S. N. RAY.

INDIA. PUNJAB. (1951). **Annual report of the Civil Veterinary Department for the year 1949-50.** [AGGARWALA, A. C.] pp. 78 + xlvii. Simla: Controller, Printing & Stationery, Punjab. **2311**

The report deals in detail with work on livestock breeding, control of contagious and other diseases, veterinary education and research, dairy development and dairy husbandry, poultry farming and fisheries. Besides a number of tables there are 18 photographs of farm-bred cattle, buffaloes, poultry, fish, etc. The technical staff consisted of 34 gazetted officers excluding the Director and 334 non-gazetted. The total expenditure of the department was Rs. 2,549,622/-.—M. K. SREENIVASAN.

INDIA. EAST PUNJAB. (1948.) **Annual Report of the Civil Veterinary Department for the period from 15-8-47 to 31-3-48.** [GAREWAL, J. S.] pp. 86. Simla: Supdt. Govt. Printing. Punjab. Rs. 3/3/-. **2312**

This report, covering the period immediately following partition of the Punjab, deals with livestock breeding, control and treatment of contagious and other diseases, and veterinary education and research.

East Punjab has the largest cattle breeding farm in India at Hissar. The year opened with a total of 10,073 animals and closed with 10,130 of which 6,797 were cattle. The main object of the farm is to produce a dual purpose animal for milk and draught and the Hariana breed was found most suitable. To improve the breed, milk recording, progeny testing of bulls etc., are followed. A buffalo breeding station section was also added to the farm. Cattle improvement schemes financed by the Indian Council of Agricultural Research were in operation in

the State but some had to be closed as breeds formerly obtained from West Punjab in Pakistan were unobtainable. Bikaneri, Hissar and Lohi sheep and Betal and Angora cross goats are being bred and experimented on.

The touring staff visited 15,880 villages and treated 119,003 cases. Of a total of 19,827 deaths from contagious diseases, 17,844 were from RINDERPEST. 2,058,900 doses of goat tissue vaccine were produced and 1,378,496 animals were vaccinated with this vaccine; 11,748 were vaccinated with goat virus and serum. 139,482 vaccinations and 10,447 inoculations were carried out against HAEMORRHAGIC SEPTICAEMIA.

A Camp Veterinary College at Hissar with 84 students was started for the displaced students from the Lahore Veterinary College.

—M. K. SREENIVASAN.

INDIA. EAST PUNJAB. (1950). **Annual report of the Civil Veterinary Department for the year 1948-49.** [GAREWAL, J. S.] pp. 96. Simla: J. Ray & Sons Ltd. 2313

The report deals with livestock breeding; treatment and control of contagious and other diseases; veterinary education and research; and dairy development and dairy farming.

The Hissar farm opened with 10,099 animals and closed with 10,208. Fifty Sahiwal cows and three Sahiwal bulls were added to serve as foundation breeding stock. The main breed, the Hariana, is being developed on the farm for milk and also for draught. 669 bulls were produced and in all 1,919 calves were born on the farm. Milk recording and progeny testing was continued.

The indigenous Betal goat and Angora cross-breeding was continued. The Hissar, Bikaneri and Lohi breeds of sheep were also bred and comparative yield of wool etc., studied. All the farm stock was protected against RINDERPEST. Wholesale tuberculin testing of stock revealed less than 2% incidence.

The East Punjab Animal Contagious Diseases Act was passed and rules are being framed. Total mortality due to contagious diseases and from other causes was 9,681 and 2,023 respectively. Deaths from RINDERPEST were decreasing and the number of outbreaks was 890 against 2,707 in the previous year. 650,751 animals were protected with goat virus vaccine, 24,312 with serum and virus and 27,649 with serum alone. The goat virus vaccine was produced locally. There were 409 outbreaks of HAEMORRHAGIC SEPTICAEMIA and 489,945 animals were protected with vaccine and 285,542 with serum. Mortality from BLACKLEG and F. & M. DISEASE was negligible.

The number of permanent Veterinary Hospitals rose to 172. There were also 600 outlying dispensaries.

The Camp Veterinary College at Hissar started in February 1948 was made permanent. Twenty new students were admitted and 13 took the B.V.Sc. degree during the year.

The Animal Genetics Section continued to study various economic and other characters and to develop a dual purpose animal for milk yield and draught. Breeding records of 3,000 cows revealed only 15 as sterile.

A dairy section with full complement of officers was established. This section is doing dairy survey and advisory work and a number of dairy development schemes are under consideration.

The staff consisted of 32 gazetted and 269 non-gazetted officers besides the Director. The total expenditure was Rs. 2,292,145 as against Rs. 1,196,160 in the previous year.

—M. K. SREENIVASAN.

BOOK REVIEWS

BIRKHÄUSER, H. & BLOCH, H. [Edited by.] (1951). Fortschritte der Tuberkuloseforschung. Vol. IV. [**Advances in tuberculosis research. Vol. IV.**] pp. 308. Basle: New York: S. Karger. Swiss fr. 43.70. 2314

The book consists of eight papers, seven of which are in English and one in French. They are:—Metabolism of mycobacteria by Bernheim-Durhan, F.; Enzymology of the genus *Mycobacterium* by Zeller, E. A. & Owen, C. A.; Electron-microscopic studies of the cellular morphology of tubercle bacilli by Werner, G. H.; The pathogenic and sensitizing properties of killed tubercle bacilli in paraffin wax by Rist, N.; Bacteriological and immunological aspects of B.C.G. vaccination by Fenner, F.; Pathogenesis of post-primary tuberculosis in relation to chronic pulmonary tuberculosis by Terplon, K.; *In vitro* effect of tuberculin on cells by Favour, C. B.; and New approaches to the study of experimental infection by Brieger, E. M. The last two of these and also that by Rist, N. dealing with killed organisms in paraffin wax are of direct veterinary interest while the others are of more general interest.—M.C.

KNAYSI, G. [Professor of Bacteriology, Cornell University.] (1951). **Elements of bacterial cytology.** pp. xviii+375. London: Constable & Co. Ltd.; New York: Comstock

Publishing Company, Inc. associated with Cornell University Press. 2nd Edit. 40s. 2315

This second edition contains much new material which has become available since 1944. Knowledge of the nucleus has increased to such an extent that a separate chapter is now devoted to it. The chapter on staining has been partly rewritten and information is now included on the cytology of the spirochaetes. The book is lavishly illustrated and the printing and paper are excellent. There is an extensive bibliography and also an adequate index.—M.C.

ANON. (1951). **Directory and catalogue of collections of micro-organisms maintained in Canada.** Ottawa, Canada: National Research Council. N.R.C. publ. No. 2359. [Special pagination.] 2316

The organisms available in the collections in Canada as at the end of 1950 are listed under the headings bacteria, phages, viruses, yeasts, and fungi. There is also an index of genera. The volume is a loose-leaf one to permit of rearrangement to suit individual requirements and of additions from time to time. The names and addresses of the institutes which maintain collections are also given with the names of their Directors.—M.C.

MOZLEY, A. (1951). **The snail hosts of bilharzia in Africa. Their occurrence and destruction.** pp. vii+78. London: H. K. Lewis & Co. Ltd. 9s. 2317

This little book is intended primarily for the African layman and describes the method of finding and identifying the snails, *Bullinus*, *Biomphalaria* and *Physopsis*. Details are given of the use of copper salts as molluscicides, the author recommending a mixture of powdered malachite, sawdust, ground Swartzia pods and coarse wood-shavings.

The author is a well known specialist on Mollusca and writes with authority.

—JAS. G. O'SULLIVAN.

ROBINSON, F. A. (1951). **The Vitamin B complex.** pp. xi+688. London: Chapman & Hall Ltd. 60s. 2318

In his preface to this survey of the present knowledge of the vitamin B complex the author confesses to an urge to systematise the heterogeneous array of data and all who benefit from consulting his book must congratulate him on achieving so successfully that urgent task. After a general introduction to the diversities of the vitamin B complex, the eleven established members of the complex are separately treated with due reference to the history of their isolation, their chemical nature, methods of estimation, distribution in food, and biological functions in animals and man. The divisions of each chapter are well-defined and references to the literature are given at the end of each section. This leads to a certain amount of repetition but is eventually more useful than a long list of references at the end of every chapter. By means of the careful labelling of chapter sections in the table of contents and the index it is possible to use the book as a guide to any required point in the intricacies of B vitamins. This should prove invaluable to workers in the field as well as to many who require information as related to nutritional, clinical or veterinary problems possibly concerned with the vitamin B complex.

A final chapter on miscellaneous factors gives much help to those who may be puzzled by the disappearance of such factors as B_3, B_4, B_5 and others of the long list of suggested members of the vitamin B complex. Though it would be impossible for any single volume to contain all that is known about the vitamin B complex this book goes a long way towards satisfying a very great need.—A. M. COPPING.

ANON. (1951). **Annotated Bibliography. Vitamin B_{12} and antibiotics in animal nutrition.** pp. 69. Rahway, N.J.: Merck & Co. 2319

This brochure contains 206 abstracts of literature, up to July 1951, on the effects of vitamin B_{12} and 60 on the effects of antibiotics in animal nutrition. Vitamin B_{12} is discussed under the headings:—I. Occurrence, II. Chemical and physical properties, III. Assay, and IV. Animal nutrition, including dogs, fur-bearing animals, fowls and turkeys, rabbits, ruminants and pigs. Antibiotics are dealt with in connexion with fowls and turkeys, ruminants and pigs. Appreciation is due to the compilers for the presentation of this information in concise form.—E.M.J.

STECK, W. (1951). Grundriss der inneren Krankheiten des Pferdes. Klinische Diagnostik und kurzgefasste Übersicht. **[Internal diseases of the horse. Clinical diagnosis and brief review.]** pp. 166. Basle: Ernst Reinhardt Verlag AG. Sw. fr. 7.60 or 9.80. 2320

In this book, after a general introduction, there are chapters dealing with:—the examination of the skin and superficial organs; temperature; the circulatory system; the respiratory system; the digestive system, with a special section on the faeces; the urinary system; the blood; the nervous system; poisoning; and allergic tests.

The book is packed with useful tables amounting to 34 altogether, dealing, for example, with factors relating to loss of condition;

disturbances of the nervous system; skin diseases; infectious diseases involving the superficial lymphatic system; various data relating to infective diseases; heart disease; vocal and other sounds related to the respiratory apparatus; lesions of the nasal mucosa; examination of body fluids; diseases of the nose and sinuses, and of the trachea, the lungs and bronchi and of the pleura; the recognition of the eggs of common parasites, together with a list of parasites of the bowel; diseases of the mouth, pharynx, oesophagus and abdomen, including considerable detail on colic; diseases of the liver; diseases of the kidney; diseases of the blood; metabolic disorders; and infectious diseases of the brain and spinal cord.

There are 60 line drawings. The book is tremendously condensed and contains a mass of essential clinical information and should be in the possession of every clinician.

MORISON, J. E. [Reader in Pathology, The Queen's University of Belfast.] (1952). **Foetal and neonatal pathology. [Human.]** pp. xi + 366. London: Butterworth & Co. (Publishers) Ltd. 50s. 2321

The book consists of three parts, namely "Disturbances of pre-natal life"; "Adaptation to extra-uterine existence"; and "Infections in foetal and neonatal life", each of which is divided into appropriate chapters. The increasing importance of infertility and of diseases of the new-born in livestock make the appearance of this well documented work particularly welcome. Although it is concerned with the human subject much of it is of value and interest to the veterinarian.

Possibly the chapter which is of most direct interest is that dealing with foetal nutrition and growth, but all of the chapters contain something of interest in veterinary problems. An adequate index adds to its value as a reference book.—M.C.

APPERLY, F. L. [Professor of Pathology, Medical College of Virginia, Richmond, Virginia.] (1951). **Patterns of disease on a basis of physiologic pathology.** pp. xiii + 456. Philadelphia: London: Montreal: J. B. Lippincott Company. 63s. 2322

The subtitle of this book "Physiologic pathology" is an attempt to indicate its nature. Function and malfunction as well as structure and lesions are emphasized. The endeavour is to trace the progress of a disease from its beginning rather than to identify the morphological alterations produced by disease. In addition to a study of the injurious agents which affect the body and of the changes produced in the affected tissues, stress is laid on the reactive changes produced in response to the injurious agent. This leads up to the concept that treatment depends on the ability of the body to compensate for the underactivtiy of the diseased organs. This rather unusual slant on pathology is stimulating and interesting.—M.C.

RAGAN, C. [Edited by.] (1952). **Connective tissues. Transactions of the second Conference May 24-25, 1951, New York, N.Y.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 190. New York: Josiah Macy, Jr. Foundation. $3.50. 2323

This book consists of *verbatim* records of discussions on six topics each briefly introduced by a specialist worker. The topics were: —"Some functional considerations of the ground substance of connective tissues"; "Chemical morphology of elastic fibres"; "Pain mechanisms in connective tissues"; "Repair processes in connective tissues"; and "Regression of scar tissue". Such symposia are difficult to abstract, their object being to stimulate provocative discussion of difficulties being encountered in research and practice.—M.C.

HOFFBAUER, F. W. [Edited by.] (1951). **Liver injury. Transactions of the ninth Conference April 27 and 28, 1950, New York, N.Y.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 232. New York: Josiah Macy, Jr. Foundation. $ 3.00. 2324

This is a *verbatim* report of a conference on liver injury, at which a small number of experts joined to exchange "ideas, experiences, data and methods". The different speakers gave a short formal account of important aspects of their subject, and this was followed by a keen and wide-ranging discussion. Apart from the amount of useful information in the report (which is worth extracting even though formal summaries and an index are lacking), the reading of it rouses a feeling almost of having been present at the stimulating discussions, and the report is recommended to all interested in liver diseases.

The subjects dealt with were: Correlation of hepatic function and structure based on liver biopsy studies; needle biopsy of the liver; clinical applications; clinical aspects of hepatic vascular physiology; studies of hepatic lymphatics; the escape of lipoid from fatty cysts in experimental dietary cirrhosis; Kwashiorkor; vitamin B_{12}, folic acid and the lipotropic agents. References to the literature appear at the end of the various sections.—E. COTCHIN.

FLYNN, J. E. [Edited by.] (1951). **Blood clotting and allied problems. Transactions of the**

fourth Conference January 22-23, 1951, New York, N.Y. [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 272. New York: Josiah Macy, Jr. Foundation. $ 4.00. 2325

The subjects discussed at the conference were: — Thrombosis; Canine haemophilia; Blood platelets; Antithrombin; Fibrinogen and fibrin. The paper on canine haemophilia was contributed by Brinkous, K. M. *et al.* and is based on studies of a family of dogs in which the condition was inherited. Details of the mode of inheritance and of the nature of the clotting defect are given. The paper was followed by a discussion which is reproduced *verbatim*.

—M.C.

ANON. (1950). **The Pharmacopeia of the United States of America. Fourteenth Revision (U.S.P. XIV) and the first U.S.P. XIV Supplement.** pp. lv + 1067 & Suppl. pp. 4. Easton, Pa: Mack Publishing Company. $ 9. 2326

This 14th Revision of the Pharmacopeia of the U.S.A. is the first U.S.P. to be issued from the Pharmacopeia Building, at 46 Park Avenue, New York City, now the administrative and conference centre for all U.S.P. activities. The phenomenal development of new and efficient therapeutic agents during the past few years is reflected in this 14th Revision; 202 new items were admitted and 119 now considered obsolete, were discarded, the primary objective being to provide an approved list of the best known and most important medicines and medical aids available in the U.S.A. at the time of Revision. The work is the result of the collaboration of officers of the U.S. Pharmacopoeial convention 1940-50 and includes: members of the medical profession and doctors of science and pharmacy; the Board of Trustees; the General Committee of Revision; Executive Committee and Subcommittees; Auxiliary Commissions in Cuba, Puerto Rico, and the Philippine Islands; Reference Standards Committee; Anti-anemia Preparations Advisory Board; Endocrine Products Advisory Board; Sterile Products Advisory Board; Vitamin Advisory Board; Amino Acids Advisory Committee; Glass Containers Advisory Committee; and Insulin Advisory Committee; a list is also given of others who have been of especial assistance during the revision period from 1947-50.

Among items discussed in the early pages are:—The History of the U.S.P.; Articles of Incorporation; Constitution and By-laws; The Proceedings of the U.S. Pharmaceutical Convention 1940 and the Adjourned Meeting of 1942; General Principles for Revision; Articles Added to the U.S.P. XIV; Articles Official in the U.S.P. XIII but not Admitted to the U.S.P. XIV; Changes in Official English Titles.

Pages 11-677 are concerned with monographs on Vegetable and Animal Drugs, Chemicals, and Preparations; and a section—General Tests, Processes and Apparatus follows on pp. 678-799. Reagents, Test Solutions, Colorimetric Solutions, Indicators, Volumetric Apparatus, Volumetric Solutions, and pH Measurements are dealt with in pp. 801-973. Tables, including those of Atomic Weights, Weight and Volume Relations, and others are given in pp. 976-1029, followed by a good index, and the First U.S.P. XIV Sheet Supplement.

Collaborative studies were made on the standardization of heparin, on preparations of amino acids, on digitoxin, on vitamin A spectrophotometric assay, on vitamin B_{12}, on penicillin, on various hormones and other subjects.

The co-operation with the British Pharmacopoeia Commission during recent revisions made possible a close agreement in many of the standards of these two Pharmacopeias. The close co-operation also with the Department of National Health and Welfare of Canada has brought about uniformity in many standards between the two countries.—E.M.J.

ALBERT, A. [Professor of Medical Chemistry in the Australian National University.] (1951). **Selective toxicity with special reference to chemotherapy.** pp. xii + 228. London: Methuen & Co. Ltd. New York: John Wiley & Sons, Inc. 7s. 6d. 2327

The subject matter of this book was based on post-graduate lectures given to research workers, senior students in biochemistry, chemistry, medicine, veterinary science and agriculture at University College, London, in 1948 and 1949. It deals mainly with the physical and chemical means by which toxic agents are capable of injuring some kinds of cells and not others even when the two kinds are growing close together. The book comprises eight chapters and two appendices, in which for example, the following are discussed:—What is selective toxicity?; the nature of the drug-receptor bond. The relative importance of chemical and physical properties in selective toxicity; metabolite analogues; the role of ionization in selective activity and the significance of traces of heavy metals; and the past history and current developments of chemotherapy. There is a good bibliography and a subject index, and the text includes many tables and diagrams, organic formulae, and five plates.

—E.M.J.

ROUX, E. R. (1951). **Botany for medical students.** pp. 201. Cape Town & Johannesburg: Juta & Co. Ltd. 30s. 2328

This book was written with emphasis on subjects of especial interest for medical and dental students yet including sufficient "pure" botany to provide a basic knowledge of the subject. Based on lectures given at the University of Witwatersrand, it has a South African bias. The subject matter is arranged in five parts: I. Anatomy, comprising five chapters; II. Physiology containing 11 chapters, three of which, for example, deal with (a) enzymes, (b) vitamins, and (c) growth, tropisms and hormones respectively; III. Taxonomy, in five chapters, covering Algae, Fungi, Bacteria and Viruses, Bryophyta and Pteridophyta, and Spermatophyta; IV. Genetics to which three chapters are devoted and V. Ecology which is dealt with in the last chapter, 25. There is a good index. The text, illustrated with very clear diagrams, tables and graphs and sometimes with organic formulae to clarify a discussion, makes an attractive book which should be a stimulating introduction to the study of botany.—E.M.J.

ANON. (1951). **Scientific and learned societies of Great Britain. A handbook compiled from official sources.** pp. 227. London: George Allen & Unwin Ltd. 57th Edit. 30s. 2329

This publication continues the service formerly provided by the Yearbook of Scientific and Learned Societies which ceased publication in 1939 after fifty years! The first part of the book deals with the organization of scientific research in Gt. Britain. The remainder lists the various societies and organizations under 15 heads which include Biology and Microscopy; Medicine; and Agriculture, Horticulture, Forestry and Veterinary Science. The information concerning any particular society covers its name, officers, address and telephone number, membership, subscription, meetings and publications.—M.C.

COMRIE, J. D. & THOMSON, W. A. R. (1951). **Black's medical dictionary.** pp. viii + 1013. London: Adam & Charles Black. 20th Edit. 2330

In the preparation of the 20th Edition the entire book was reset and full advantage was taken to preserve what was good in the old editions and to add only those recent advances which would appear to be standing the test of time. Extensive revision was carried out, but the fundamentals of medicine so clearly set out by the first editor were retained. Where there has been a definite advance in knowledge, the appropriate section has been rewritten, and new sections in chemotherapy have been added. Many of the old have been replaced by new illustrations and ten new full-page plates have been added.

The new edition retains its standing between a technical Dictionary of Medicine and a guide to the domestic treatment of the commoner ailments. The aim in this is as was in the first edition to "give information in simple language upon medical subjects of importance and general interest".—E.M.J.

BOOKS RECEIVED

BAER, J. G. (1952). **Ecology of animal parasites.** pp. x + 224. Urbana, Ill.: University of Illinois Press. $ 5.00.

BAUER, H. & ZIMMERMANN, P. (1951). Verhütung und Bekämpfung der Geflügelkrankheiten. **[Diseases of poultry.]** pp. 176. Stuttgart: Eugen Ulmer. DM. 4.50.

EMMENS, C. W. (Edited by.) (1950). **Hormone assay.** pp. xii + 556. New York: Academic Press Inc. $ 11.50.

FERMI, C. (1950). La rabbia. **[Rabies.]** Vols. I & II. pp. xlv + 624 & 625-1342. Siena: Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo". L.1200.

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